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ABSTRACT

Until 1970, the ability of the educational system to prepare students for jobs was so widely accepted that support for education was based largely on manpower needs. To the general public, more schooling meant better jobs. During the 1970's, students, faculty, placement officers, and educational policy makers have questioned the usefulness of post-secondary education in work. Two studies discuss a five-year effort to examine the utilization of college training in careers, and the importance of educationally-related jobs to job satisfaction. A sample (N=4,057) of 1961 freshmen answered surveys in 1961, 1971 and 1974. Another sample of 1970 freshmen responded to surveys in 1970 and 1977. Two major questions guided the investigation: How closely related to their college major are the jobs of these college graduates? How satisfied are they with their jobs? One major conclusion was that having a job that was unrelated to one's college major is not in itself sufficient cause for dissatisfaction. (Author/BMW)

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College Education and Employment...

The Recent Graduates

By Nancy L. Ochsner
and Lewis C. Solmon

With the assistance of
Jean G. Kessler

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Preface

THIS MONOGRAPH represents the culmination of a five-year effort to study the utilization of college training in careers and the importance of having an educationally related job to overall job satisfaction. Two groups of college graduates cooperated by responding to several surveys each: a sample of 1961 freshmen answered surveys in 1961, 1971, and 1974, and a sample of 1970 freshmen responded to a survey in 1970 and again in 1977. To these 16,000 or so respondents, we are indeed grateful.

The two studies were made possible by funding from the National Institute of Education and by supplemental grants from the CPC Foundation and the Rockefeller Foundation. Findings from the first study, the 1974 follow-up of 1961 freshmen, have been published by the CPC Foundation: *College Education on the Job—The Graduates' Viewpoint*, 1976, and *Job Satisfaction After College—The Graduates' Viewpoint*, 1977, both by Ann S. Bisconti and Lewis C. Solmon. Another report was published by Praeger: *College as a Training Ground for Jobs*, by Lewis C. Solmon, Ann S. Bisconti, and Nancy L. Ochsner, 1977.

Coauthors of this report are Nancy L. Ochsner and Lewis C. Solmon. Mrs. Ochsner is a research associate at the Higher Education Research Institute in Los Angeles. She has been involved extensively in several studies including such topics as: the educational and career development of college graduates, alternative careers for Ph.D.'s, and adults in post-secondary education. In addition to *College as a Training Ground for Jobs*, she has written or co-authored two books and numerous articles.

Lewis C. Solmon is the executive officer and secretary/treasurer of the Higher Education Research Institute and associate professor in residence in the Graduate School of Education, University of California, Los Angeles.

Dr. Solmon received his Ph.D. in Economics from the University of Chicago in 1968. In addition to his extensive writings on the impact and benefits of college education, he has also been concerned with manpower forecasting, mobility and nontraditional careers of Ph.D.'s, problems of equal access in postsecondary education, and, most recently, the current role of the master's degree.

He is currently editor-in-chief of *New Directions for Education and Work*, a quarterly sourcebook published by Jossey-Bass Publishers. Dr. Solmon has published 12 books and monographs and numerous articles in popular and professional journals. In October 1978 he was selected as one of the "100 young leaders of the academy" by *Change* magazine.

Serving as research analysts for this project were Joanne J. Gordon and Lynda T. Smith. Their valuable assistance is greatly appreciated. Jean G. Kessler, CPC Foundation consultant, provided many useful suggestions, overall guidance, and encouragement which greatly improved this volume. Gratitude is expressed to all of the staff members of the Higher Education Research Institute and of the College Placement Council who assisted in the preparation of the manuscript or publication of this monograph, as well as to the Research Advisory Committee of the CPC Foundation.

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Introduction

UNTIL 1970, THE ABILITY of the educational system to prepare students for jobs was so widely accepted that support for education was based largely on manpower needs. To the general public, more schooling meant better jobs. The educators assured the nation that manpower needs would be met in time of national crisis (e.g., scientists for defense and space programs) and personal need (e.g., service workers for industry, the home, and health care fields).

During the 1970's, however, students, faculty, placement officers, and educational policymakers have questioned the usefulness of postsecondary education in work. Postsecondary education has become almost commonplace, with over 60 percent of high school graduates enrolling in traditional two- and four-year colleges and many more continuing their studies in vocational programs. Manpower shortages are evident in certain occupations while surpluses appear in others. Some people claim that higher education no longer ensures a good job or, in some cases, any job at all, and that too many college graduates are forced to take jobs that do not utilize their education.

By now, almost no one is shocked to hear about the exponential growth in American higher education enrollments over the last 25 years. In 1955, 2.6 million people were enrolled in colleges and universities. By 1975 this figure had expanded to 11.2 million (U.S. Department of Health, Education, & Welfare, 1978). In 1950, 6.2 million people (age 25 or older) had a bachelor's or higher degree. By 1975, 16.9 million people had at least a bachelor's degree (U.S. Bureau of the Census, 1976). In 25 years, then, the number of college graduates in the workforce more than doubled. Unfortunately, however, the rate of increase in the number of jobs traditionally filled by people with a college education did not keep pace

with the rate of college-degree production—supply of graduates exceeded their demand in the labor market. Forecasts to the mid-1980's at least do not indicate any relief. The Bureau of Labor Statistics (1973), for example, projects that only about one-fifth of all jobs in 1980 will "require" a college education, leaving as many as 2½ college graduates competing for every "choice" job. "Choice" jobs, apparently, are those which require a college education.

Underemployment

Based on these and similar figures, educators, researchers, policymakers, and students have been bemoaning the problems of underemployment and overeducation. For most economists, who view education as a human capital investment, the problem of too many college graduates for too few commensurate jobs is one of overeducation (Freeman, 1976). The imbalanced market will adjust itself in time; surpluses will become shortages then surpluses again in a cyclical fashion as the word about job opportunities filters down to freshmen (Freeman, 1971). Students react to the job market but their adjustments are not felt for about four years, the time between college entry and graduation.

For other social scientists, the problem is one of underemployment, not overeducation (O'Toole, 1977). They argue that students should not have to adjust to the market by changing their major field or by not enrolling in college at all. Instead, employers should redesign jobs to accommodate the more highly educated labor pool. As in most controversies, neither view is completely wrong, nor completely right. Some workers will adjust to the market, slowly, and some employers will see the advantages of making previously unchallenging jobs more challenging.

The debate on the value of college education for work remains unresolved. Richard Freeman (1976) observed a decline in the relative income advantage of college graduates compared with high school graduates and from this has inferred that Americans are overeducated.[1] Ivar Berg (1971) declared that 80 percent of college graduates have jobs previously filled by workers with lower educational credentials. Con-

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[1] For a dispute of Freeman's findings, see David R. Witmer "Is the Value of College ... Really Declining?" *Change*, 1976, *8*, (11), 46–47, 60–61 and "Are Americans Overeducated? Are Returns on Investments in Higher Education Lower Than Those on Alternate Investments?" Paper presented at the annual meeting of the American Educational Research Association, Toronto, March 1978.

sequently, college training does not have the same employment benefits it had in the past. Finally, James O'Toole (1975, 1977) predicted that a new meritocracy will develop, wherein the 20 percent with all the good jobs will be confronted by the 80 percent with the bad jobs. He fears that the 80 percent will challenge the right of the 20 percent to have special privileges and that the "reserve army of the underemployed" may rise against the new meritocracy.

But before anyone—students, educators, workers, employers—does anything about the situation, it must be determined what, if anything, can or should be done. The job market is not static; that is what makes manpower forecasting such a hazardous business (Gordon, 1974). That is also why many educators advocate the liberal arts rather than vocational training. A liberal arts graduate, they say, can be flexible enough to adapt to a changing world. Non-liberal arts graduates face the increasingly serious possibility of skill obsolescence. Workers with specific skills may be more successful than their more generally prepared counterparts in finding related jobs at first, but, later in their lives, they may find themselves enrolling in job retraining programs as many as six or seven times.

Two assumptions underlie these discussions of liberal arts and vocational higher education: 1) Work is the center of American life and 2) A primary, if not *the* primary, role of higher education institutions is to prepare students for their working lives. Certainly the Protestant Ethic supports work as the center of life, but even this basic American tenet is in question today. Because of delayed entrance into the labor force due to prolonged schooling, lack of unlimited opportunities for every American citizen to find a meaningful job, and longer life spans which result in longer retirements, leisure time activities are attracting much more concern. The quality of leisure is almost as important as the quality of work to a growing number of Americans. Sometimes the definition of work includes leisure (Hoyt, 1974). Education, then, prepares students for work and leisure.

The question is: How well do the colleges and universities perform their role? For the past ten years the cries have been "not so well." Too many college graduates, particularly from the humanities, it is argued, are underemployed and the future outlook is dim.

Scope of the 1974 Study

These opinions about the relationship between education and work

were questioned in a recent study conducted by the Higher Education Research Institute (HERI) (Bisconti & Solmon, 1976, 1977; and Solmon, Bisconti, & Ochsner, 1977). This study involved a 1974 follow-up of 1961 freshmen who had responded to the Cooperative Institutional Research Program's (CIRP) freshman survey. This group of freshmen were also surveyed in 1965 and 1971.[2] The 1961 CIRP freshmen had been working full time for up to ten years by the time of the 1974 follow-up.

The 1974–1961 study focused on undergraduate education. Consequently only bachelor's-degree holders were surveyed. The analyses were further limited to those working full time and white (because of an insufficient number in other racial-ethnic groups for separate analyses). The analyses then, were based on the responses of 3,033 men and 1,024 women, a total of 4,057. (In subsequent discussions, this group of respondents will be referred to as the 1974 cohort.)

Two major questions guided the investigation: How closely related are the jobs to the major field of these college graduates? and How satisfied are they with their jobs? Almost half the sample responded that they held closely related jobs and only one in four said they held completely unrelated jobs. More than half the sample (57 percent) were very satisfied with their jobs, whereas only four percent were not at all satisfied. Of the 26 percent who held unrelated jobs, fewer than one in twenty held them involuntarily. Furthermore, only 26 percent of those college graduates who involuntarily held unrelated jobs were completely dissatisfied. One major conclusion of the study, therefore, was that having a job unrelated to one's college major is not in itself sufficient cause for dissatisfaction. This may not seem so important until it is realized that the definition of underemployment, as used in much of the recent literature about the scarcity of jobs for college graduates, involves the lack of match between job and major.

The study concluded that, after nine years in the labor force, a large number of college graduates were still using, on the job, knowledge they

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[2] The Cooperative Institutional Research Program, sponsored by the American Council on Education and the University of California, Los Angeles, is directed by Alexander W. Astin, professor of higher education at UCLA and president of the Higher Education Research Institute. The 1961 survey was conducted at the National Merit Scholarship Corporation, Evanston, Illinois. For a full account of the freshman four-year follow-up surveys, see Astin and Panos (1969). The 1971 survey methodology and findings are reported in El-Khawas and Bisconti (1974) and Bisconti & Astin (1973). The 1974 survey methodology and findings are reported in Solmon, Bisconti, & Ochsner (1977) and Bisconti & Solmon (1976, 1977).

had gained in college and that the majority were very satisfied with their jobs. Most respondents in unrelated jobs held their jobs voluntarily, and the relationship of job to major had little to do with job satisfaction. These results contradict conclusions by researchers such as O'Toole, Freeman, and Berg who observed that few jobs are available which enable college students to utilize their training, that underemployment of college graduates is widespread, and that this leads to worker dissatisfaction.

Several characteristics of the 1974–1961 cohort led to questions about the relevance of the results to more recent graduates. In particular, those who had participated in the study had been working for approximately nine years, entering the labor force about 1965. The year 1965 was characterized by a much lower unemployment rate than more recent years. The overall unemployment rate was 4.5 percent in 1965 and 8.3 percent in 1976 (U.S. Bureau of the Census, 1976). For college graduates in the 20 to 24 age category, the unemployment rate was 4.7 percent in 1965, dropping to under two percent in 1967, but then increasing in the 70's to over eight percent in 1977 (U.S. Bureau of Labor Statistics, 1966, 1968, 1978). Clearly, the 1961 freshmen entered the labor force when the economy was much stronger than it is today.

Another difference between the employment situation in 1965 and more recent times is indicated by those entering the labor force with new bachelor's degrees. Some 501,000 of these degrees were awarded in 1965, but the number grew to 925,000 by 1976.

Assuming that a stronger economy can better utilize baccalaureate talent, the number of bachelor's recipients per dollar of Gross National Product (GNP) per capita (adjusted for price level changes) is a good measure of the economy's absorption capacity. This ratio results in figures of 97.1 in 1960, 112.9 in 1965, 168.2 in 1970, and 176.3 in 1975. Converting these figures into indices to measure the ability of the economy to absorb new bachelor's-degree recipients, if the 1960 figures are given a value of one, by 1976 the index becomes 1.816. That is, over 80 percent more bachelor's-degree holders per dollar of GNP per capita were available for jobs in 1976 than in 1960. The 1965 index is much closer to the one for 1960 than for 1976.

The 1974–1961 survey was replicated in 1977 by the Higher Education Research Institute. A sample of 1970 college freshmen who entered the labor force around 1974–75, during much less favorable times, was surveyed. (This group of respondents will be referred to in subsequent discussions as the 1977 cohort.) Overall, the results of the more recent study corroborate the most significant conclusions from the earlier study, although there are slight differences.

The Present Study

Questionnaires were sent to 28,549 of the 180,000 CIRP respondents of 1970.[3] An attempt was made to oversample those 1970 respondents who aspired to a bachelor's degree or less, were black, were freshmen at two-year colleges, and who anticipated majoring in the humanities. Of the 28,549 surveyed, 3,842 men and 5,197 women responded, an overall response rate of 31.7 percent. Adjusting for the number of nondeliverable questionnaires (6,194), however, resulted in a 40.4 percent response rate—a very hearty one for this type of survey.[4]

Since the 1974 follow-up study of the 1961 freshmen (Solmon, Bisconti, & Ochsner, 1977) was based on a sample of white respondents who had received the bachelor's but no advanced degree and were employed full time, this study of 1970 freshmen was designed to be an analysis of the sample which fits those three criteria (white, bachelor's-degree holders, full-time employed). A separate analysis of the small number of blacks in the sample would be almost meaningless without weighting their responses. The response rate for blacks was much lower than for whites—only 13 percent. Even though blacks were oversampled, they under-responded.

As in the earlier 1974 study of 1961 freshmen, the decision to analyze the responses of bachelor's-degree holders exclusively was dictated by the present study's focus on undergraduate education. Likewise, the analyses were further limited to those who were working full time in 1976–77. The present analyses then, are based on the responses of 1,713 white men and 2,233 white women, a total of 3,946. For both cohorts, however, numbers may vary slightly due to non-responses to specific questions.

Although the two studies were designed to parallel each other as closely as possible, there are several notable differences in situations between the 1974–1961 and 1977–1970 cohorts which could affect comparisons. The first one, already noted, is that differences in opportunity to utilize college training and in job satisfaction might be a function of the different labor market conditions at the time graduates first entered the labor force. Even if one minimizes the effect of labor market con-

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[3] The 1977–1970 survey was funded by the National Institute of Education (Grant No. 76-0080). Supplemental funds were also provided by the Rockefeller Foundation and the CPC Foundation.

[4] A more detailed discussion of the survey procedures is available from the Higher Education Research Institute, 924 Westwood Boulevard, Suite 850, Los Angeles, CA 90024.

ditions when the two cohorts began working, the economy was much stronger in 1974, the time of the follow-up of 1961 freshmen, than in 1977, the time of the follow-up of 1970 freshmen. For example, the unemployment rate in March 1974 for all college graduates was 1.9 percent whereas in March 1977, it was 3.3 percent or almost 50 percent higher (U.S. Bureau of Labor Statistics, 1975, 1978).

Another difference is that the 1977 follow-up obtained information on job attitudes of individuals who had been working for three years or less, whereas the 1974 follow-up obtained perspectives from those who had been in the labor force for approximately nine years. It is generally agreed that it takes five to ten years for an individual to achieve long-run career aspirations. For example, in the first years of work, individuals tend to obtain on-the-job training (Mincer, 1970) and to experiment with various career options. These activities usually result in lower levels of job satisfaction (U.S. Department of Labor, 1974) and in more negative attitudes about the value of education than those revealed later in life. Hence, length of time in the labor force may account, in part, for differences between the 1974 and 1977 responses.

Characteristics of 1977 Cohort

1 Career Choices

ALTHOUGH THE ATTEMPT in this study was to make the 1977–1970 cohort as comparable as possible to the 1974–1961 cohort, some basic differences are evident.[5] Whereas 75 percent of the 1974 cohort are men and 25 percent are women, only 43 percent of the 1977 cohort are men and 57 percent are women. This may reflect, in part, the fact that college enrollments for women have increased disproportionately between 1961 and 1970. It is more likely, however, that more women tend to enter the labor market just after college graduation and work until they are married or have children, then take a break from the labor pool for a while (Bisconti, 1978). Since the 1977 cohort was out of school only about two or three years, and the 1974 cohort was out about nine years, one would expect the 1977 group to have proportionately more women.

Each occupation and major has a greater number of women in 1977 than in 1974. However, the women respondents are distributed similarly across major fields and occupations in both of the cohorts. The same

[5] All differences between the two samples which are reported in this paper are significant at $p \leq .01$ level. Because of the large sample sizes, differences of only one percentage point are still statistically significant. However most differences discussed are larger than those required for statistical significance. They must also be *substantively* significant to warrant mention.

is true of the male respondents. Hence, comparisons across the two cohorts of all women or all men are not affected by different response patterns. Differences between all respondents in the two samples might be clouded by differential representation of each sex, if there were differences by sex in the variables being compared. However, for most of the factors considered, sex differences are small. Where appropriate, data are provided so differences for each sex can be compared. Hence it appears that other factors (labor market conditions, years of work experience) account for most of the differences between the two cohorts.

Another salient difference between the two cohorts is the proportions from public and private institutions. Whereas about two-thirds of the 1974 cohort entered private institutions as freshmen in 1961, about two-thirds of the 1977 cohort entered public institutions as freshmen in 1970. This difference could be explained in several ways: 1) Private institution enrollments in 1961 may have been much higher, proportionately, than in 1970; 2) There were no junior colleges included in the 1961 CIRP sample; in 1970, junior colleges were abundant, thus the public institutions may have been more represented in 1970 than in 1961; or 3) The 1961 CIRP sample was biased toward private institutions and/or the 1970 CIRP sample was biased toward public institutions. Probably the omission of two-year college attenders from the 1961 freshmen survey accounts for some of the difference. Yet there is evidence that those who begin college in two-year institutions are less likely to achieve the bachelor's degree (Astin, 1976). Hence they are less likely to appear in this sample. However, the main reason for the public-private difference is the fact that the four campuses of the University of California which participated in the 1970 freshman survey were oversampled in the 1977 follow-up.[6] These factors should be kept in mind when interpretations of the data are suggested.

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[6] The University of California awarded a grant to the Laboratory for Research in Higher Education at UCLA, so that all 1970 UC freshman respondents could be surveyed along with the stratified national sample. A separate report on the UC respondents has been prepared (Pace & Rosenstein, 1978). Of the 28,000 people surveyed in 1977, 4,240 had attended UCLA, UC-Riverside, UC-Santa Barbara, and UC-Santa Cruz as freshmen in 1970. Given that the national sample included approximately 10 percent of the 300,000 freshman respondents, only about 424 from the University of California would have been expected within the special effort. A total of 1,080 responses were received from UC freshmen. Of these, 385 are included in the report. Hence, 9.8 percent of the respondents analyzed here are from the four UC campuses. Although the four UC campuses are very diverse, their overrepresentation probably adds some bias to the results.

Distribution of Major Fields[7]

There are greater proportions of arts and humanities (other than English), mathematics, and education majors in the 1977 cohort than in the 1974 cohort, but the difference is never greater than four percentage points. Although between 1961 and 1970 the proportion of humanities majors in the full freshman class declined precipitously, this decline is not completely evidenced by the distribution of major fields in *Table 1*. (English majors declined, but other arts and humanities majors did not, and where declines are evident, they are smaller than those for the whole class.) This is due to the survey design, which oversampled humanities majors in 1977.[8]

Further, there are greater proportions of economics, business, and engineering majors in the 1974 cohort than in the 1977 cohort. These fields have traditionally enrolled more men than women and, as noted previously, the 1974 cohort included almost three times as many men as women whereas the 1977 cohort included almost twice as many women as men.

In both cohorts the majors with the greatest proportions of women were education, arts and humanities other than English, and social sciences other than economics. For men, they were business, natural sciences, arts and other humanities, and engineering. A relatively large proportion of 1974 cohort men also majored in the other social sciences and an even larger proportion of 1974 women majored in English.

Distribution of Occupations

Women in both cohorts most often became educators: 40 percent in the 1974 cohort and 31 percent in the 1977 cohort (*Table 2*). Next most common occupations for women were office work and the health services. Men typically went into administration, education, sales, and engineering. Greater proportions of men and women in the 1974 cohort than in the 1977 cohort became educators, reflecting the recent decline in demand for teachers. The proportion of administrators dropped for the 1977 men

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[7] In the 1974 follow-up, major field was assumed to be the area in which a respondent took the most courses. The 1977 follow-up questionnaire asked for *both* the major field *and* the area in which most courses were taken. Over 70 percent (in most fields over 85 percent) took the most courses in their declared major field.

[8] A supplemental grant from the Rockefeller Foundation served to increase the number of humanities majors in the sample.

TABLE 1

Major Fields of Both Cohorts, by Sex

(In percentages)

Major Field	1977 Cohort Total (N = 3,946)	1977 Cohort Men (N = 1,713)	1977 Cohort Women (N = 2,233)	1974 Cohort Total (N = 4,057)	1974 Cohort Men (N = 3,033)	1974 Cohort Women (N = 1,024)
English	5	3	7	8	5	15
Arts & humanities (other)	17	13	20	13	11	19
Economics	2	4	1	6	8	1
Social sciences (other)	13	10	15	13	12	15
Natural sciences	12	14	10	12	13	9
Mathematics	8	9	7	6	7	5
Business	13	22	6	18	23	5
Education	12	3	19	8	4	21
Engineering	5	12	0	8	11	0
Other	12	9	14	7	6	10
No response	1	1	1	0	0	0

TABLE 2

Occupations of Both Cohorts, by Sex

(In percentages)

Occupation	1977 Cohort Total (N = 3,946)	1977 Cohort Men (N = 1,713)	1977 Cohort Women (N = 2,233)	1974 Cohort Total (N = 4,057)	1974 Cohort Men (N = 3,033)	1974 Cohort Women (N = 1,024)
Accountant	5	8	3	5	6	1
Office worker	10	5	15	6	4	11
Administrator	12	14	9	14	17	6
Business owner	1	2	0	4	5	1
Salesperson	5	9	3	8	10	3
Mathematician/scientist	7	9	6	7	7	6
Health service worker	9	4	12	3	2	7
Engineer	6	13	0	7	9	0
Educator	21	8	31	19	12	40
Social worker/counselor	4	3	4	2	1	4
Artist	4	3	5	3	2	4
Skilled worker	4	5	3	1	1	0
Semi-/unskilled worker	3	4	2	1	1	0
Other	6	12	2	18	20	14
No response	3	3	4	3	3	4

but rose for the 1977 women, probably reflecting the trend of women to enter less traditional occupations. As might be expected, nine percent of the men and five percent of the women in the 1977 cohort compared with two percent of the men and none of the women in the 1974 cohort were employed as skilled or semi-skilled workers. Many of these more recent graduates will probably move into more professional work as opportunities become available.

All of the occupations listed and discussed separately included substantial numbers of respondents. However, there were also a variety of occupations reported by very small numbers of respondents in both cohorts which were grouped together in the "Other" category. Because of the heterogeneous nature of this category, it is not possible to make any statements about it.

In both cohorts, most education majors and large proportions of humanities majors became educators, most engineering majors became engineers, and large proportions of economics majors became administrators (*Tables A-1* and *A-2*). Social science majors, other than economics, tended to end up as office workers, administrators, salespersons, educators, or social workers/counselors in almost equal proportions. Natural science majors tended to become mathematicians/scientists or health service workers, mathematics majors aggregated toward mathematicians/scientists or educators, and business majors most often became administrators or accountants.

These major-to-occupation paths seem well established whether the graduate is two years or nine years out of college. One substantial exception revealed was that greater proportions of the younger than older social science majors became social workers/counselors whereas greater proportions of older social science majors became administrators. A similar pattern was observed for engineering majors and to a lesser degree for mathematics and natural science majors. Yet, many of these so-called job switches are probably natural career progressions.

Distribution Across Employment Settings

As would be expected from the occupational distribution, about two-thirds of the men in both cohorts entered the business/industry sector (*Table 3*). Among women, almost half of the 1974 cohort were teaching in educational institutions and one-quarter were employed in the business/industry sector. The 1977 cohort women were employed in about equal proportions (almost two-fifths each) by business/industry and ed-

ucational institutions. This probably reflects the tighter labor market for elementary and secondary teachers in more recent years. For both groups, proportionately more women than men were found in the education and human services sectors, while more men were employed in the business/industry and government sectors.

TABLE 3

Employment Settings of Both Cohorts, by Sex

(In percentages)

Employment Setting	1977 Cohort			1974 Cohort		
	Total (N = 3,946)	Men (N = 1,713)	Women (N = 2,233)	Total (N = 4,057)	Men (N = 3,033)	Women (N = 1,024)
Business/industry	50	65	38	52	62	23
Postsecondary education	5	4	5	4	2	7
Elementary/secondary education	21	8	32	18	11	41
Human services organization	12	6	17	5	3	12
Government	11	16	8	13	14	8
No response	0	0	0	8	7	10

Note: Included under Business/industry are: commerce, finance, insurance, real estate, manufacturing, construction, retail, wholesale, other business, service establishments, transportation, public utilities, agriculture, and mining. Included under Postsecondary education are: college, university, technical institute, and professional school. Included under Government are: U.S. military service and federal, state, and local government.

2 Expectations as Freshmen

A MAJOR PURPOSE of this monograph is to describe the employment outcome of a recent group of college graduates. Of special interest are their life and career expectations, the circumstances surrounding their occupational choices, their perceptions of the usefulness of their education in their jobs, their views on underemployment, their job attitudes, and their expressed satisfaction or dissatisfaction with their full-time employment.

Where possible, the experience and opinions of this recent cohort (the 1977 follow-up of 1970 freshmen) are contrasted with the older cohort (the 1971 and 1974 follow-ups of the 1961 freshmen). When there are similarities in the responses of the two cohorts, no interpretive problems arise. However, when there are differences, they cannot be automatically or exclusively attributed to the differences in the periods involved: the 1960's vs. the 1970's. As was noted earlier, the age of the respondents and the length of employment experience must also be considered.

Anticipated Major

With only a few exceptions, the actualization rate of freshman plans to major in a certain field ran between 40 to 60 percent for both cohorts (*Tables* A-3 and A-4). The major field with the highest persistence rate

in both cohorts was business. Over 70 percent of the 1974 cohort and over 60 percent of the 1977 cohort who anticipated majoring in business graduated as business majors. Engineering also experienced an actualization rate of over 50 percent for both cohorts. The smallest number of freshmen expected to major in economics and, in the 1977 cohort, this major had the greatest dropout rate—only 11 percent of those who anticipated that they would major in economics remained as economics majors. In the 1974 cohort, the natural sciences lost the most majors, retaining only 37 percent.

Anticipated Occupation

Respondents from both freshman classes were much more likely to change occupational choice than major field (*Tables A-5* and *A-6*). Although there was a great deal of variation by occupation, overall, fewer than one-third of the respondents from either cohort who expected, as freshmen, to enter a certain occupation actually were employed in that occupation at the time of the surveys.

This was especially true of the older (1974) cohort where only the occupations of educator, administrator, and engineer retained more than a third of the freshmen who originally expected to work in those occupations. In the younger (1977) cohort, health service worker, accountant, and office worker, in addition to educator and engineer, retained between a third and a half of the freshmen who intended to enter those occupations.

Thus, the longer the respondents were out of college, the less likely they were to work in the occupation they had expected to work in when they were freshmen.

Several related reasons can be offered to explain this difference. Freshmen tend to view the first job they think they will have as their probable career occupation. They do not think about careers as a series of jobs. The longer the time between surveys, the more time respondents had to change their minds about desirable occupations and the greater the likelihood that they could try an occupation, not like it, and move on to another job field. Further, the longer the respondents were in the workforce, the more likely they were to have been promoted out of the first job and into a more responsible position. For example, a larger share of the 1974 cohort than of the 1977 cohort who, when freshmen, had anticipated becoming administrators actually had become administrators by the time of the respective follow-ups.

For both groups, those who had expected to become educators were more likely than their peers to actually be educators at the time of the follow-up surveys. For the 1974 cohort, those who had expected to become social workers or counselors were least likely to be in that occupation. For the 1977 cohort, those who had expected to become business owners were least likely to own businesses two or three years after graduation. Possibly many had discovered that this was an unrealistic expectation for an initial job following graduation. No one in either cohort had expected to become semi-skilled or unskilled workers.

Reasons for Attending College

As freshmen neither cohort was asked why they decided to go to college at all or how important improving their academic skills, getting a good job, or following parental advice was in their decision-making. Two years after graduation, however, the 1977 cohort was asked to reflect and recall how important certain reasons were in their decision to attend college. More than three-quarters of the cohort said "To get a better job" and more than half said "To make more money" were very important reasons (*Table 4*). The other most common responses were not job ori-

TABLE 4

Reason Attended College, by Sex: 1977 Cohort

(Percentages responding "very important")

Reason Attended College	Total	Men	Women
Prepare for graduate or professional school	10	10	11
Improve academic ability	53	44	59
Contribute more to community	15	12	17
Get a better job	78	75	81
Make more money	56	57	55
Gain a general education and appreciation of ideas	62	53	68
Learn more about things that interest me	70	63	76
Meet new and interesting people	43	32	51
Get involved in extracurricular college activities	12	12	12
Be with friends	10	7	13
Find a spouse	1	1	2
Avoid the draft	5	11	0
Parental or family encouraged	33	29	37
Nothing better to do	4	4	4
Always expected to go	42	38	45

ented, however. "To learn more about things that interest me," "to gain a general education and appreciation of ideas," and "to improve academic abilities" were very important contributing factors. Not important were, "to find a spouse," "nothing better to do," and "to avoid the draft."

Women were somewhat more likely than men to indicate that most reasons were very important to them. This was particularly the case for intellectual reasons (improve academic ability, appreciate ideas, etc.) and for social or personal reasons (meet new people, be with friends, family encouragement). All these reasons were very important to fewer men than women. Women were even somewhat more likely than men to feel that getting a better job was important. However, a slightly larger proportion of men hoped college would enable them to make more money.

In general, the 1977 respondents said they were concerned about both their future in the job market and their acquisition of more knowledge when they decided to go to college in 1970. Whether their perceptions of the importance of these reasons for attending college changed since they were freshmen is not known. Neither is it known whether these respondents were more or less concerned with making money, getting a good job, or gaining a general education than other generations of college graduates.

3 Life Goals

ONE REASON GIVEN for the college-educated "reserve army of the underemployed" beating their drums so loudly is not that these graduates of the 1970's are so terribly bad off compared to previous decades of college graduates, but that their job and life expectations increased in the wake of their predecessors' successes, and these expectations may not have been realized—at least, not yet. If indeed this is a major cause of the reported massive discontent of recent college graduates, then we should learn what their expectations were and are and how they compare to other classes of freshmen and graduates.

Business Interests. A recent study of the college impact on personal and career development showed that, four years after entering college, business interests tended to have declined (Astin, 1977).[9] Classified as business interests were statements that being very well off financially, being successful in one's own business, and becoming an expert in finance and commerce were very important or essential life goals. Unlike Astin's samples of 1966 and 1967 freshmen followed up after four years, the current study's 1970 freshmen showed increased business interests when followed up in 1977 (*Table 5*).

The difference between Astin's results and those reported here can be explained in several ways. First, because the job market was poorer at graduation for the 1970 freshmen than for either the 1966 or 1967 freshmen, they had good reason to be more concerned with their financial success, or at least were influenced by the media that they should be.

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[9] This study compared responses of 1966 freshmen in 1966 and 1970 and of 1967 freshmen in 1967 and 1971.

Second, college may have the effect of depressing business interests, but by two or three years after graduation the effect may be reversed by experiences in the job market. In other words, perhaps business interests decline in college but rise again soon after graduation. Third, differences in the samples' characteristics may explain differences in the results. The current study of 1970 freshmen followed up in 1977 includes only whites who are bachelor's recipients. Astin's samples include all racial groups of any degree attainment.

There is some evidence for the first explanation in that from 1970 to 1977 a definite increasing trend emerges for freshman classes to view being very well off financially as a very important or essential life goal (American Council on Education, 1967–72; Astin et al., 1973–77). This hypothesis is further reinforced by the fact that the 1961 freshmen, when followed up in 1971, viewed business interests as less important than the 1970 freshmen in 1977. This lower interest was particularly marked among the women (*Table A-7*).

Status Needs. According to Astin (1977), status needs also declined in importance over the four years of college attendance, but not as much as business interests. Two of the items defined as status needs were: "Become an authority in own field" and "Obtain recognition from colleagues for contributions in own special field." For the 1977 cohort there was a small decline in the importance of becoming an authority in one's field, but a sizable increase in the importance of obtaining recognition from colleagues.

Three other items representing status needs were also included: "Become a community leader," "Make a theoretical contribution to science," and "Have administrative responsibility for the work of others." For both of Astin's four-year follow-ups and the current study's seven-year follow-up, the importance of becoming a community leader and making a theoretical contribution to science declined, while the importance of having administrative responsibility increased. The increased desire for administrative responsibility is much more dramatic for the present seven-year than for Astin's four-year follow-ups. Since 1971, the trend for all freshman classes has been toward an increase in the importance of having administrative responsibility as a life goal.

Social Values. For 1970 freshmen surveyed seven years after matriculation, all social values declined in importance as life goals. Items classified as indicating social values included: helping others in difficulty, influencing the political structure, influencing social values, participating in organizations like the Peace Corps or Vista, and keeping up to date with political affairs. Astin's (1977) four-year follow-ups reveal mixed results.

TABLE 5

Life Goals of Both Cohorts

(In percentages)

Essential or Very Important Life Goals	1977 Cohort		1974 Cohort[1]
	In 1970	In 1977	In 1971
Business Interests			
Be very well off financially	30	48	43
Be successful in own business	33	47	32
Become expert in finance and commerce	11	11	*
Status Needs			
Become an authority in my field	59	54	48
Obtain recognition from colleagues	32	47	42
Become a community leader	11	10	15
Make a theoretical contribution to science	9	6	3
Have administrative responsibility for work of others	14	35	*
Social Values			
Help others in difficulty	62	52	53
Influence the political structure	14	8	*
Influence social values	29	28	*
Participate in an organization like Peace Corps or Vista	18	3	*
Keep up to date with political affairs	55	32	*
Participate in a community action program	27	13	*
Artistic Interests			
Become accomplished in a performing art	12	9	12
Write original works	12	12	6
Create artistic work	16	26	*
Family Concerns			
Raise a family	69	47	73
Get married within the next five years	26	37	*
Continue career while raising a family	*	56	*
Interrupt career while children are young (under six)	*	28	*
Job Aspects			
Have a steady job	*	84	*
Have a job using my college training	*	59	*
Personal Concerns			
Never be obligated to people	19	26	*
Develop a meaningful philosophy of life	77	75	*
Have an active social life	54	55	*
Have friends with backgrounds and interests different from mine	62	44	*

[1] The 1974 cohort (1961 freshmen) were asked about life goals only in the 1971 follow-up.
* Not all items were asked in each of the three surveys.

Of the three social-value items included in Astin's surveys, two—helping others in difficulty and keeping up to date with political affairs—showed an increase in importance. Participating in organizations like the Peace Corps or Vista declined in importance, although not quite as much as it did for the current study's respondents. No definite trends upward or downward are evident for the cross-section of freshman classes from 1966–1977.

Artistic Interests. Compared to other groups of life goals, artistic interests had very low proportions (ranging from 9 to 26 percent) of the 1977 cohort rating them as very important or essential. Further, the only significant change was that these respondents were much more interested in creating an artistic work when surveyed in 1977 than they were as freshmen in 1970. The women not only started out with relatively more interest, but also increased the importance they attach to creating an artistic work more than the men (*Table A-7*).

Family Concerns. In contrast to artistic interests, family concerns were important life goals. Overall, 69 percent of the current study's 1970 freshmen said raising a family was a very important or essential life goal. Seven years later, however, only 47 percent said it was so important. For women, the decrease was even greater—from 76 to 49 percent. The recent women's liberation efforts could have influenced this trend away from family life goals and toward increased business interest. On the other hand, since the decline in family interest occurs two to three years after graduation, their family concerns may have been realized so that other (as yet unachieved) goals have become more prominent.

We do not know whether the 1974 cohort became more or less concerned with raising a family during the ten years after matriculation, but in 1971 almost three out of four felt that raising a family was a very important or essential life goal for them. However, this concern was more predominant among the men (77 percent) than among the women (60 percent).

Although raising a family declined as a concern for the 1977 cohort, getting married within the next five years increased—more so for the men, who started out lower anyway, than for the women.

Only 45 percent of the women said, in 1977, that continuing their career while raising a family was a very important or essential life goal. There are no comparable data to determine if this is an increase or decrease since their freshman year or how the percentage compares to the 1974 cohort. Almost as many women said that it was very important to them to interrupt their career while their children are young (under six years of age).

Job Aspects. Over 80 percent of the 1977 cohort said that having a steady job is a very important or essential life goal. Of all the life goals, this is the one of most concern, regardless of sex. Moreover, having a job which used their college training was an important life goal to over half of these respondents. The women were more concerned than the men with this aspect, but there were proportionately more women than men who said they held closely related jobs. As *Table 6* indicates, the more closely related the job to the major field, the more likely the respondents were to say that having a job using their college training was essential or very important. It might be that many of those in unrelated jobs realized that relatedness is not that important for job satisfaction after all.

TABLE 6

Importance of Having a Job Using College Training, by Relation of Job to Major and by Sex: 1977 Cohort

(In percentages)

Importance of Having Job Using College Training	Closely Related		Somewhat Related		Not Related	
	Men	Women	Men	Women	Men	Women
Essential	28	36	13	15	11	15
Very important	41	41	31	34	20	24
Somewhat important	23	18	39	34	33	35
Not important	8	5	17	16	36	26

Personal Concerns. Among the personal concerns rated, the most important to the 1977 cohort was developing a meaningful philosophy of life (*Tables* 5 and A-7). From 1970 to 1977 there was a decline in the number of women citing this concern as important while there was an increase among the men. Overall, about three-fourths of the cohort stressed the importance of developing a meaningful philosophy of life when they were freshmen in 1970 and still felt it was important in 1977 after two or three years in the labor force. Among more recent freshman samples, however, there was a definite decline in the proportions viewing this as an important or essential life goal.

The personal concern regarding never being obligated to people increased in importance for both men and women of the 1977 cohort but, even with this increase, only one-fourth of the respondents cited this concern as important or essential.

Having an active social life was important to slightly more than 50 percent of the cohort both in 1970 and in 1977. Having friends of backgrounds and interests different from theirs decreased in importance over the seven years. There were no discernible trends for these concerns across freshman years from 1967 to 1977.

Major Field Differences. Just as the importance of some of the life goals varied by sex, it also varied considerably by major field. Detailed analyses not included in this text showed that respondents from both the 1977 and 1974 cohorts who majored in economics, business, or engineering were more likely than the others to be concerned with business interests when they were freshmen as well as when they were followed up—seven years later (1977) for the younger cohort and ten years later (1971) for the older.

Similarly, those who majored in English or in the other humanities were most likely to be concerned with artistic interests. Social science, other than economics, and education majors were more likely to say "helping others in difficulty" is an essential or very important factor. For those followed up in 1977, having a steady job was relatively more important to business majors than to other majors, while using college training on the job was more important to education majors than to other majors.

In summary, contrary to Astin's freshman-to-senior follow-up studies of the early 70's, the 1977 cohort showed increased business interests and status needs and decreased social and political concerns three years after graduation. Although there are insufficient data at present to test the reasons adequately, it appears that these changes in life goals are due more to overall societal value changes than to the effect of college attendance. The college environment may very well have an impact on students' attitudes and values, but the effects are not necessarily longlasting. In fact, by two years after graduation, attitudes may have shifted due to adjustments required by the "real world" of business and family responsibilities.

The 1977 cohort was most concerned with having a steady job and then developing a meaningful philosophy of life. Additionally, almost 60 percent said that having a job using their college training was a very important or essential life goal.

Usefulness of College Education

4 Dimensions of Usefulness

ALTHOUGH THE MAJOR THRUST of the current study was on college education in relation to employment outcomes, the various other ways in which college can be useful were also an important aspect. Respondents were asked to rate the usefulness of their college education in the promotion of intellect (general knowledge, ability to think clearly), preparation for adult responsibility (leadership, choice of goals), improvement of career prospects through credentialing, and the building of job-related skills. As was the case with the 1974 cohort, the ratings of the 1977 respondents were much more positive than negative, with the basic difference being between "very" and "somewhat useful" (*Table 7*).

Ratings of Usefulness

The highest rating given was for the promotion of intellect, with 70 percent or more of both cohorts indicating that their college education had been very useful in increasing general knowledge. However, only slightly more than half of the 1977 cohort and less than half of the 1974 group felt that college education had been very useful in increasing their ability to think clearly.

A high percentage of those in each cohort agreed that the bachelor's degree had been a factor in being hired by their current employer. An even higher percentage (69 percent of the 1974 cohort and 61 percent of the 1977 cohort) indicated that their college education had been very useful in increasing their chances of finding a good job.

Just under 50 percent of each cohort felt that college had been very useful in teaching them a skill which enabled them to get their first job.

The more recent graduates were more likely to indicate this benefit than the earlier graduates (48 percent of the 1977 cohort and 42 percent of the 1974 cohort). Of course, the older workers are less likely to remember the connection between their college training and their first job. However, a similar pattern was observed for the usefulness of college in providing knowledge and skills used on the current job, with 53 percent of the 1977 cohort citing this benefit compared with 38 percent of the 1974 cohort.

The bachelor's degree was viewed as considerably less important for promotion than for initial hiring and, again, those who had been in the labor force longer were less likely to attribute promotion to their degree. Clearly, some factors, such as on-the-job experience, have more of an effect on perceived usefulness of college after nine years than after only three years. College apparently prepares people more for their first job than for what they will be doing nine years after graduation.

TABLE 7

Ratings of Usefulness of College Education

(In percentages)

	1977 Cohort			1974 Cohort		
Dimension	Very Useful	Somewhat Useful	Not Useful	Very Useful	Somewhat Useful	Not Useful
Increased general knowledge	70	29	1	73	27	0
Increased ability to think clearly	54	41	6	43	53	4
Increased leadership ability	35	48	17	22	58	20
Helped choose life goals	35	48	17	21	49	29
Increased chances of finding a good job	61	30	9	69	27	4
Taught a skill that enabled me to get first job	48	24	28	42	29	29
Bachelor's degree was factor in being hired by current employer	62	18	19	59	21	19
Contacts made in college with professors or friends helped get current job	14	16	70	5	11	84
Gave knowledge and skills used in current job	53	30	17	38	50	12
Bachelor's degree was necessary for promotion	41	25	34	35	25	40

Contacts for jobs were not a frequent benefit of college and, when they did exist, they dissipated quickly. Only 14 percent of the more recent graduates indicated that contacts made in college with professors or friends were very useful in getting their current job and only one-third as many of the older group still relied on these contacts. For many in the 1977 cohort their current job may have been their first job after graduation, hence college contacts would be expected to have more of an effect on them. The older cohort had more time since graduation, during which they probably changed jobs at least once or were promoted out of their first job.

College education received lower marks for increasing leadership ability and for assistance in choosing life goals. Only one-third of the 1977 cohort and one-fifth of the 1974 cohort rated their education very useful in these ways. However, about half of the respondents in both groups indicated somewhat useful, to make the overall ratings more middling than negative. Nonetheless, some improvement in these areas is clearly needed if these outcomes of college education are desirable.

Men and women in each cohort responded similarly regarding the usefulness of their college education.

Differences by Orientation of Major

Usefulness of college education differed considerably by orientation of major (*Table A-8*). As was the case with the earlier (1974) cohort, the responses of the 1977 cohort clearly indicated that those who majored in vocationally oriented fields were more likely to use their education in their work. Twice as many vocationally oriented majors as those with liberal education majors cited the usefulness of their education in teaching skills that enabled them to find their first job, and three-fifths more said their education gave knowledge and skills used in the current job, increased their chances of finding a good job, and that the bachelor's degree was a factor in being hired. On these specifically career-related dimensions, those persons who majored in scientifically oriented areas represented a midpoint between the liberal and vocational responses but were somewhat closer to the ratings of the vocationally oriented respondents.

On the other dimensions of usefulness, the differences between the majors were less striking. Slightly more of the liberal than vocational majors cited the usefulness of education in increasing general knowledge and ability to think clearly. College education did not receive high ratings from any of the majors for increasing leadership and helping to choose

life goals, although the ratings of the more recent graduates were higher than those of the earlier cohort.

Thus, from the perspective of both cohorts of graduates, liberal education fields of study were less likely to be used in careers and not much more useful than vocationally oriented fields for intellectual development. It should be remembered that these dimensions of usefulness were not viewed negatively by the respondents but rather distinguished between a high and moderate degree of usefulness. However, the findings for both cohorts seem to indicate that vocationally oriented majors may provide a broader, more general education for work and life than does today's liberal education.

Usefulness by Occupation

Findings from the survey of the 1974 cohort showed that college education provides more job-related knowledge for some occupational groups than for others (Bisconti and Solmon, 1976). The responses from the 1977 cohort reinforced these findings (*Table 8*). "Very useful" ratings

TABLE 8

Usefulness of College Education in Providing Knowledge and Skills Used in Current Job, by Occupation

(In percentages)

Occupation	1977 Cohort			1974 Cohort		
	Very Useful	Somewhat Useful	Not Useful	Very Useful	Somewhat Useful	Not Useful
All occupations	54	30	17	38	50	12
Accountant	73	18	9	62	36	2
Office worker	12	40	48	17	59	24
Administrator	31	47	22	24	63	12
Business owner	34	39	27	26	57	17
Salesperson	22	52	26	16	64	20
Mathematician/scientist	66	28	6	29	54	17
Health service worker	81	14	5	82	17	2
Engineer	65	31	4	56	42	2
Educator	84	15	1	67	31	2
Social worker/counselor	48	40	12	40	53	7
Artist	58	33	9	34	52	14
Skilled worker	29	33	38	4	41	54
Semi-/unskilled worker	11	23	66	0	14	86

for providing knowledge and skills used in the current job were given by 84 percent of the educators, 81 percent of the health service workers, 73 percent of the accountants, 66 percent of the mathematicians and scientists, and 65 percent of the engineers. Lowest ratings (one-third or fewer) were given by business owners, administrators, salespersons, office workers, and skilled and semi-skilled workers. Social workers/counselors and artists were at about the 50 percent level in indicating usefulness.

While the pattern was the same for the two cohorts, a considerably higher percentage of the more recent group in almost all occupations felt that their college education had been very useful in providing knowledge and skills for the current job. After nine years out of college, the 1974 cohort was more apt to rate the skills provided by college education as *somewhat* rather than *very* useful in their current job. This reduction in the job usefulness of college is probably due to the older respondents having been promoted out of their more related jobs or having changed their jobs one or more times since graduation.

For both cohorts, college seems to have been more useful in enhancing general knowledge and in increasing chances of finding a good job than in providing job skills.

5 Contribution of Course Work

COLLEGE GRADUATES are frequently thought of in terms of their major field of study. Supply and demand of graduates are projected based on major fields and their related occupations. Employers of college graduates frequently establish their hiring goals on this basis. Because of these common practices, respondents were asked to rate the usefulness of their major and minor fields of study, as well as the usefulness of other undergraduate courses taken.

Slightly over half of the 1977 cohort stated that they used their major field of study on the job frequently or almost always, while a quarter reported rarely or never (*Table 9*). About one-third also said they used their minor courses frequently or almost always and one-fifth used their other undergraduate courses.

The same differences between men and women and between the two cohorts discussed in the other dimensions of usefulness were also observed for the usefulness of college courses (*Table 10*). Women in both cohorts generally perceived their education to be more useful on the job than did the men. Further, both men and women in the more recent cohort were more likely to use their major courses more frequently in their work than the earlier cohort. There was little difference in the proportions of the two cohorts using minor or other undergraduate courses, however.

One explanation for the greater use of major by the more recent graduates is that entry-level jobs frequently require the use of specific college studies to a greater extent than higher level jobs. By the time they have worked nine years, college graduates are likely to have been promoted into positions that require more general skills than those obtained in their major course work.

TABLE 9

Use of College Courses in Work

(In percentages)

Courses	Extent of Use					
	1977 Cohort			1974 Cohort		
	Almost Always/ Frequently	Sometimes	Rarely/Never	Almost Always/ Frequently	Sometimes	Rarely/Never
Major	54	20	26	45	26	30
Minor	32	27	41	29	32	39
Other undergraduate	21	45	34	21	48	31

TABLE 10

Use of College Courses in Work, by Sex

(In percentages)

Courses	Extent of Use											
	Men						Women					
	1977 Cohort			1974 Cohort			1977 Cohort			1974 Cohort		
	Almost Always/ Frequently	Sometimes	Rarely/ Never	Almost Always/ Frequently	Sometimes	Rarely/ Never	Almost Always/ Frequently	Sometimes	Rarely/ Never	Almost Always/ Frequently	Sometimes	Rarely/ Never
Major	51	23	27	43	28	30	56	17	27	50	21	29
Minor	28	29	43	28	34	39	35	26	39	33	29	38
Other undergrad.	19	44	37	20	49	32	23	46	31	24	45	31

Use of Curricular Content

For both cohorts, the use of the content of a major varied considerably by type of major (*Table 11*). Just as in the 1974 cohort, the younger graduates in the more career-specific majors were most likely to use their major in their jobs. One-half or more of those with degrees in education, business, natural sciences, and engineering in both cohorts indicated they used their major frequently or almost always. For the younger cohort, a major in mathematics was also frequently used.

Among these highly used majors, however, business was the only one to increase in use substantially over time. The only other major to show considerable increase in use as time in the labor force increased was English. As one moves up the career ladder, knowledge of business principles and communications and writing skills probably become more important. Other specific knowledge is less likely to be employed later. A similar, although less pronounced, trend was noted for economics majors, with those in the 1974 cohort more likely than those in the 1977 cohort to use their major courses.

The greatest drop in usage of major was found for mathematicians. Of these, 50 percent of the 1977 cohort, but only 36 percent of the 1974 cohort, were using their majors.

TABLE 11

Use of Major Courses in Work, by Major

(In percentages)

Major	Extent of Use					
	1977 Cohort			1974 Cohort		
	Almost Always/ Frequently	Sometimes	Rarely/ Never	Almost Always/ Frequently	Sometimes	Rarely/ Never
All majors	54	20	26	45	26	30
English	37	25	37	44	23	33
Arts & humanities (other)	41	14	45	27	19	54
Economics	34	34	32	36	36	28
Social sciences (other)	36	26	37	26	29	45
Natural sciences	59	16	26	51	19	30
Mathematics	50	27	23	36	33	30
Business	50	24	26	56	31	13
Education	66	15	19	62	22	16
Engineering	58	30	12	49	28	24

In both cohorts, arts and humanities majors (other than English) were the most likely to report that they rarely or never used their major in their work (45 percent of the 1977 cohort and 54 percent of the 1974 cohort).

Content Use by Occupation

In order to investigate the education-career relationship further for the 1977 cohort, the use of major field was analyzed by the respondents' current occupation (*Table A-9*). (Any occupation with fewer than ten observations for a particular major was not included.) As in the 1974 findings, fairly conventional patterns were noted. A major in business appeared to provide the broadest base of usefulness. At least half of the business majors employed as accountants, office workers, administrators, mathematicians or scientists, and educators reported that they use the course content of their business major frequently or almost always. Next most useful was a natural science major, with 50 percent or more of those graduates reporting frequent use of their major as mathematicians or scientists, health service workers, engineers, and educators.

Four of the nine majors included in the 1977 study had only one occupation in which 50 percent or more of those majors were using their course content. English was used almost always by 78 percent of the educators, economics by 55 percent of the administrators, education by 82 percent of the educators, and engineering by 66 percent of the engineers.

There were some striking differences between the two cohorts. For the most part, the degree of usefulness dropped as graduates were employed longer (*Table A-10*). One exception to this trend was English. Only 26 percent of the 1977 administrators who were English majors used their major on the job almost always or frequently, whereas 51 percent of the 1974 administrators did. For office workers who were English majors, the percentage increased from 10 percent of the 1977 workers to 21 percent of the 1974 workers. In sales, the percentage increased from zero to 19 percent. Only for educators who majored in English did use decrease, but by only four percentage points. Apparently, English becomes more useful in the working world the longer one works. Economics was also viewed as more useful over time for a number of occupations, except administration, while engineering was almost equally useful to engineers in both cohorts.

6 Preparation for Work Activities

HISTORICALLY, the purpose of a college education was to prepare an elite group of students for the professions: clergy, law, medicine, and teaching. Today, with greater access to college by all socio-economic groups, and with greater numbers of colleges and universities of different types—public and private, two-year and four-year, liberally oriented and vocational—the purposes of higher education are less clear. Graduate schools still prepare students for the professions, but even here, in face of the supply of educators and lawyers, for instance, outweighing the demand for jobs, their success in achieving this goal is being questioned. Should colleges and universities be responsible for preparing students for the world of work, for providing the knowledge and skills necessary for particular types of jobs, and for distributing job opportunity information? Or is the major function of colleges and universities to stimulate learning and enhance students' general knowledge? The answer is probably that they should do both, with some institutions emphasizing preparation for work and others emphasizing increased general knowledge.

Regardless of the explicitness with which higher education institutions express their goals, how well do they prepare students to function in the labor force? In the 1977 cohort, only 11 of the 24 work activities had 50 percent or more workers who stated that their college education had prepared them to perform the particular work activity. In the 1974 co-

hort, there were even fewer—only nine such activities (*Table 12*). In almost every case, a greater proportion of the younger cohort than the older said that college prepared them to perform their current work activities. For three kinds of activities, however—accounting, clerical, and technological activities—the proportion saying college prepared them to perform the activities was greater for older workers than for younger workers. Especially for clerical and technological activities, college seems to have a delayed effect.

The work activity with the greatest proportion saying college prepared them for it, regardless of cohort, was laboratory research. In fact, nearly 90 percent of the 1977 cohort and over 70 percent of the 1974 co-

TABLE 12

Preparation by College Education for Work Activities Currently Performed, by Activity

(In percentages)[1]

Activity	1977 Cohort	1974 Cohort
Accounting	53	55
Administration, management	44	40
Clerical	16	27
Counseling	45	28
Data processing, computer science	58	25
Engineering	75	65
Farming, forestry	45	41
Health service	70	55
Mathematical, statistical, actuarial	70	63
Performing, creative arts	73	61
Personnel, employee relations	33	29
Production, quality control	24	21
Program planning, budgeting	33	21
Public relations, advertising	34	21
Publications	38	30
Public safety, community service	35	19
Research (laboratory)	88	71
Research (other)	60	49
Sales, marketing	29	28
Speaking, discussion leading	52	47
Teaching	83	69
Technology, design, construction	47	51
Training	22	15
Writing, editing	63	61

[1] Percent of those performing activity who learned to perform this activity in college.

hort who are engaged in laboratory research said college prepared them. Other largely college-prepared activities were teaching (83 percent in 1977, 69 percent in 1974), engineering (75 percent in 1977, 65 percent in 1974), performing or creative arts (73 percent in 1977, 61 percent in 1974), mathematical (70 percent in 1977, 63 percent in 1974), and health services (70 percent in 1977, 55 percent in 1974). The activities least likely to be learned in college for the younger graduates were clerical, training, and production, with one-quarter or fewer of those who perform the activities saying college prepared them. For the older graduates, training, public safety, program planning, public relations, production, and data processing were the least likely to be college-prepared work activities.

For both cohorts, there was a great deal of variation by major for those who said their work activities were college prepared (*Tables A-11* and *A-12*). Over 80 percent of the English majors who teach or write or do editing said their college education prepared them. For other arts and humanities majors, highly prepared activities were the performing and creative arts and teaching. The natural science majors were prepared for laboratory research, health services, and mathematical tasks; mathematics majors, for mathematical activities and teaching; business, for accounting and administrative work, mathematical tasks, sales, and marketing; education, for teaching; and engineering, for engineering and mathematical tasks. The social science majors were not prepared by college for any particular activities more than others. The younger respondents who majored in engineering and mathematics were prepared in data processing and computer science considerably more than the older respondents, probably because computer-related studies boomed during the 1970's, but were just beginning in the 1960's.

Job Skill Acquisition

Clearly, many job skills are not provided by college education but are acquired through other means. Graduates in the 1977 cohort were asked to what extent various types of activities had contributed to their acquisition of knowledge or skills required to perform their current job (*Table 13*). Of all the responses, by far the most frequent was "on-the-job experience." Of the 1977 cohort, 69 percent cited "on-the-job experience" as contributing very much. Major college courses and general college study were felt to be the next most important way of acquiring skills, with 44 percent of the respondents indicating major courses contributed very much and 39 percent indicating general college study.

TABLE 13

Method of Acquiring Job Skills, by Occupation: 1977 Cohort

(Percentages responding "very much")

Occupation	Major Courses	Other College Courses	General College Study	College Work Experience	Extra-curricular Activities	Formal Job Training	Other Formal Training	On-the-Job Experience	Leisure Activities
All occupations	44	21	39	24	10	27	12	69	8
Accountant	65	16	33	14	5	22	8	71	3
Office worker	9	10	24	14	3	26	9	67	4
Administrator	26	18	48	24	12	33	17	76	7
Business owner	21	13	20	33	23	23	7	67	34
Salesperson	19	13	37	20	14	41	18	67	16
Mathematician/scientist	61	31	45	17	1	29	8	67	3
Health service worker	76	24	40	32	6	36	21	67	5
Engineer	51	13	27	26	5	25	4	73	6
Educator	77	37	54	30	14	16	10	69	22
Social worker/counselor	41	27	56	29	11	29	14	70	10
Artist	52	16	33	39	25	21	4	79	19
Skilled worker	22	20	24	22	11	31	15	72	12
Semi-/unskilled worker	4	1	8	14	6	11	6	57	4

Formal job training was an important contributor for only 27 percent and college work experience for only 24 percent. It should not be assumed that formal job training and college work experience would not be good means of acquiring job skills since it is not known how many respondents had the opportunity to utilize these methods.

The question pertaining to how job skills are acquired was stated differently in the two questionnaires. In 1974, respondents were asked, "Aside from your college education, how did you acquire the knowledge or skills necessary for your job?" The response to "on-the-job experience" was even greater for the 1974 cohort (*Table A-13*). Eighty-four percent of this cohort said that they had acquired the necessary skills for the job through "on-the-job training." For both cohorts the responses were uniformly high regardless of occupation. For the 1974 cohort, the proportions ranged from a low of 70 percent (semi- or unskilled workers) to a high of 93 percent (accountants); for the 1977 cohort, from 57 percent (semi- or unskilled workers) to 79 percent (artists). In the 1977 cohort, only health service workers and educators said that their major courses contributed more than on-the-job experience.

Formal training, whether in-house or at an outside institution, was perceived as contributing less toward acquiring job skills by the 1977 cohort than by the 1974 cohort. The question arises as to whether employers are providing opportunities for such training to the same degree in the 70's as they did in the 60's when the supply of college graduates was more limited.

Although extra-curricular activities and work experience during college are considered "pluses" by employers when job candidates are being evaluated, only small proportions of the 1977 respondents felt that these activities contributed toward their job skills. Perhaps the value in these activities perceived by employers is in maturation rather than job skills.

Among the various occupational groups in the 1977 cohort, college work experience and extra-curricular activities were of more value to artists and business owners, while sales people, health service workers, administrators, and skilled workers were more likely to have benefited from formal job training by their employer. In the 1974 cohort, salespeople, mathematicians, and scientists were more likely than other workers to be trained "in house." Artists and business owners were most likely to have picked up the job skills themselves.

7 Workers' Recommendations

SINCE PERCEPTIONS of the utility of various majors for jobs depend very much on whether or not the recommender majored in an area or not, recommendations of majors have been considered separately for those who majored in each field and those who did not. *Table 14* shows the proportions of respondents who recommended their own major for their current job.

The three majors most recommended by both cohorts were business, engineering, and education. Next were mathematics and the natural sciences, although the order for these two was reversed between the two cohorts.

For the older (1974) cohort, business and engineering were especially popular recommendations: 86 percent of business majors recommended business and 81 percent of engineering majors recommended engineering. For the younger workers (1977 cohort), the proportions were not quite as high: 73 percent recommended business and 71 percent, engineering. The proportions of education majors recommending education were similar in both cohorts, just under 70 percent, while between 60 and 66 percent of mathematics and natural science majors in both cohorts recommended mathematics and the natural sciences.

Economics was the least recommended major by the more recent labor force entrants (42 percent), probably because entry-level jobs do not utilize the knowledge acquired in economics courses as much as more advanced jobs do. For the older workers, arts and humanities (other than

English) were the least recommended majors (46 percent), probably an indication that very few of the individuals with these majors have been able to acquire and hold related jobs.

The remaining majors were recommended by about 50 to 60 percent of their majors in both cohorts. There do not seem to be many systematic differences between the two cohorts other than the ones already mentioned.

Differences Between Men and Women

For men in both cohorts, the most frequently recommended major was business, with a greater proportion of business majors who had been in the labor force longer recommending it than was the case for those who had graduated more recently (87 percent vs. 74 percent). Among 1977 women also, the most frequently recommended major was business (72 percent). Although business was only the third most recommended major among the 1974 women, the decrease in the proportion of those recommending it was not significant. For men, business majors may become more relevant after several years in the labor force, since promotion from entry-level jobs to managerial or administrative jobs probably implies a greater use of business knowledge. Women in the older cohort may have been somewhat less likely to have been promoted into these higher-level jobs.

TABLE 14

Workers Recommending Own Major for Own Job, by Major and Sex

(In percentages)

Major	1977 Cohort			1974 Cohort		
	Total	Men	Women	Total	Men	Women
English	61	60	62	59	57	61
Arts & humanities (other)	57	56	57	46	45	47
Economics	42	41	46	49	48	70
Social sciences (other)	56	55	57	57	55	61
Natural sciences	62	59	65	65	61	80
Mathematics	66	64	68	60	59	66
Business	73	74	72	86	87	70
Education	68	52	70	69	51	78
Engineering	71	71	*	81	81	*

* Fewer than 10 observations.

The second most frequently recommended major for men in both cohorts was engineering, which was also recommended more by older workers. This increase in relevance probably reflects the fact that more advanced engineers are using their training in more sophisticated jobs. There was an insufficient number of women engineers to provide meaningful data.

The major most recommended by women in the 1974 cohort was the natural sciences (80 percent). Possibly many of these women were teaching science while others may have been working in the health fields.

For women in both cohorts, the second most frequently recommended major was education, with a larger proportion of the 1974 women education majors recommending it than of the more recent graduates (78 percent compared with 70 percent). The greater proportion of the older women recommending education may result from the fact that those who entered the labor force earlier were more likely to be holding teaching jobs. For men, education was not a particularly popular recommendation regardless of years in the workforce. Only slightly more than half of the men education majors in either cohort recommended education.

Economics was recommended by 70 percent of the 1974 women economics majors, tying with business as the third most recommended major for that group. However, fewer than half of the 1977 women or of the men economics majors from either cohort recommended this major.

Recommendations by Non-Majors

Study areas recommended for one's own job by workers who had not majored in that area are shown in *Table 15*. Again, majoring in business was the most recommended path by men in the labor force for a longer period of time, and was also the second most recommended path by the younger men.

Other than business, there were very few similarities in the recommendations made by those who recommended their own major for their current job and the recommendations made by non-majors. The recommendation of an English major by non-English majors was made relatively frequently by both cohorts. This was also the case for the social sciences other than economics, even though English and the other social sciences were among the least recommended subjects by those who had majored in them.

The higher frequency of the recommendations by non-majors than by majors emphasizes the different perceptions of what goes on in English courses or areas like sociology and psychology. Those who have not majored in these subjects apparently believe that their interpersonal skills and their ability to write and communicate would have benefited from these majors. Those who have majored in them recognize that the study of Shakespeare, for example, does not contribute directly to their ability to write a memorandum and that running rats in an experimental psychology laboratory does not improve one's ability to get along with others.

TABLE 15

Study Areas Recommended for Own Job, by Workers Not in Major Field

(In percentages)

Study Area	1977 Cohort			1974 Cohort		
	Total	Men	Women	Total	Men	Women
English	34	34	34	28	27	30
Arts & humanities (other)	31	29	33	18	14	27
Economics	17	24	12	25	29	14
Social sciences (other)	38	31	43	33	29	45
Natural sciences	21	22	20	14	13	16
Mathematics	36	44	31	19	20	18
Business	34	38	31	42	49	26
Education	18	13	22	12	8	25
Engineering	7	14	3	10	12	2

A comparison of *Tables 14* and *15* implies that perceptions by outsiders of the content of the English and social sciences courses are unrealistically optimistic in terms of the actual usefulness of these courses in careers. Those trained in business might be somewhat disappointed that entry-level jobs do not allow full utilization of their knowledge, but after a number of years the content of business courses becomes more relevant, particularly for men.

Study Areas for Specific Occupations

Accounting. Study areas most recommended by persons working in accounting occupations tended to be concentrated in fewer areas than

was the case for most other occupations (*Table 16*). This was particularly so for the 1974 cohort. The most frequently recommended area was business, which included accounting and which was recommended by 95 percent of the older accountants and 79 percent of the younger. The only other study area viewed as useful by about half of the older accountants was economics. However, over half of the younger accountants considered mathematics useful and almost half also recommended economics and English.

Administration. Business was the study area cited must frequently by those working in administration (*Table 17*). Over two-thirds of the administrators in both cohorts made this recommendation. There were also fairly sizable proportions of administrators, particularly in the younger cohort, who recommended English, mathematics, the social sciences including economics, and the arts and humanities as useful study areas for their occupation.

Sales. Business again was the study area which dominated the recommendations (*Table 18*). This was especially so for the older cohort working in sales. Eighty percent of this group recommended business for sales occupations. Also recommended by at least a third of those in sales were the social sciences, economics, and English. The younger cohort also recommended the other arts and humanities and mathematics.

Office/Clerical. Possibly because the persons in this occupational group were generally working at a less than professional level, the recommendations for study areas were few and the proportions were not large (*Table 19*). Business, the only exception, had approximately 70 percent of both cohorts of office workers recommending it.

Engineering. As would be expected, engineering was recommended as a study area for this occupation by three-quarters or more of the engineers in both cohorts (*Table 20*). Among the younger cohort, two-thirds also recommended mathematics and one-half recommended the natural sciences, whereas only about a third of the older engineers viewed these studies as useful. About a third of both cohorts also recommended business and English.

Teaching. Since a majority of the educators in the study were teaching at the elementary level, education was the study area most frequently recommended by this occupational group (*Table 21*). Additional study areas were drawn strongly from the liberal arts. These other recommendations probably reflect the courses being taught by the respondents. Thus, while just about one-quarter of the teachers recommended the natural sciences, probably all of the natural science teachers did.

TABLE 16

Study Areas Most Recommended for Accounting Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Business	79	95
Mathematics	57	23
Economics	46	49
English	44	34

[1] Base is persons employed as accountants.

TABLE 17

Study Areas Most Recommended for Administrative Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Business	68	79
English	42	31
Mathematics	41	17
Social sciences (other)	40	37
Arts & humanities (other)	39	14
Economics	33	42

[1] Base is persons employed as administrators.

TABLE 18

Study Areas Most Recommended for Sales Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Business	62	81
Arts & humanities (other)	42	18
Social sciences (other)	39	36
Mathematics	38	13
English	36	30
Economics	35	42

[1] Base is persons employed in sales occupations.

TABLE 19

Study Areas Most Recommended for Office/Clerical Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Business	69	73
English	33	35
Mathematics	30	16
Social sciences (other)	26	37

[1] Base is persons employed in office/clerical occupations.

TABLE 20

Study Areas Most Recommended for Engineering Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Engineering	72	97
Mathematics	66	37
Natural sciences	51	35
Business	33	40
English	33	28

[1] Base is persons employed in engineering occupations.

TABLE 21

Study Areas Most Recommended for Teaching Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Education	72	63
Social sciences (other)	57	51
Arts & humanities (other)	50	36
English	41	35
Mathematics	34	22
Natural sciences	27	23

[1] Base is persons employed in teaching occupations.

Mathematics and Science. The types of jobs encompassed by this occupational area probably vary widely, especially so between the two cohorts (*Table* 22). While three-fourths of the younger group recommended mathematics, this proportion dropped to just about half of the older workers. Business was the second most recommended study area, with just under half of each group citing it. The natural sciences were also recommended by 41 percent of the younger workers.

Health Service. Over three-fourths of the older health service workers recommended the natural sciences for this occupational area but slightly fewer than two-thirds of the younger workers did, although it was still the study area most frequently cited (*Table* 23). However, 60 percent

TABLE 22

Study Areas Most Recommended for Mathematics and Science Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Mathematics	75	54
Business	44	46
Natural sciences	41	28
English	28	17
Engineering	16	21

[1] Base is persons employed in mathematics and science occupations.

TABLE 23

Study Areas Most Recommended for Health Service Occupations

(In percentages)

Study Area	1977 Cohort[1]	1974 Cohort[1]
Natural sciences	62	78
Other	60	16
Social sciences (other)	42	40
Mathematics	36	28
English	22	20
Business	15	27

[1] Base is persons employed in health service occupations.

of the younger group also recommended "other" study areas which were probably very specific to the health service field and which may not have been as widely available when the older workers attended college. About 40 percent of both groups cited the social sciences as the next most useful study area, indicating the interpersonal as well as technical nature of this occupational field.

Other than the study area specific to an occupation, English and mathematics were felt to be moderately useful by all occupational groups. Since these are basic educational courses, this might be expected. Somewhat less expected was the recommendation of business for all occupational areas except teaching. The next most frequently recommended study area was the social sciences, other than economics. Since psychology would be a prominent part of this study area, its frequent recommendation may reflect a feeling of need for interpersonal skills.

In summary, it appears that training in areas of business is highly recommended regardless of whether or not one majored in business and regardless of occupation. Clearly, by the time college graduates have been employed for nine years, business skills are very important. Most college graduates, probably by this time at management level, feel they have or would have benefited from some of the knowledge provided in business courses. Probably at least a few basic courses in business would be a useful addition to any discipline.

A second observation is that, among non-majors, the more recent graduates tend to recommend a greater variety of study areas. This tendency probably reflects greater specialization in entry-level jobs than is required for advanced positions which primarily require business, interpersonal, and communications skills.

A third and very important observation is that non-majors have a somewhat different perception of the value of English and social science courses than do those who major in them. Consequently, if courses in English and the social sciences offered the training anticipated by those who have not experienced them, the learning experience might become significantly more suitable as preparation for work.

Finally, the frequency of recommendations of English, mathematics, business, and the social sciences across all occupational groups suggests that college graduates' perceptions of a useful college education is one which would build competencies in communications, numerical, administrative, and interpersonal skills. These recommendations offer some guidance to both curriculum designers and students in developing a program of study which will provide greater usefulness in the world of work.

Influences on Job Satisfaction

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8 Dimensions of Job Satisfaction

MOST PEOPLE, when they leave school to go to work, try to get a job that will start them along their anticipated "career path." They may have a goal in mind, such as to be a president of a bank, but they do not expect to reach that goal within the first few years. Perhaps they will start as a teller and gradually work their way up to operations manager of a branch bank. Maybe they will never become president but, as long as they are moving up and as long as they see they have a chance to become president, they are satisfied with their progress and their job fits into their long-range plans. Evidence shows that it generally takes five to ten years for workers to have career stability—that is, to finally feel they are making expected progress in their chosen career (Mincer, 1970).

Overall Job Satisfaction

The 1974 cohort (1961 freshmen) had been in the labor force approximately nine years prior to being surveyed in 1974. Thus, they could have been expected to have achieved a fair degree of career stability and this would be reflected in their responses to the survey. Additionally, as was noted previously, the 1974 cohort entered the labor market in the mid-1960's, a relatively good time for college-educated workers. The 1977 cohort (1970 freshmen), on the other hand, had been in the labor force a maximum of three years prior to being surveyed and had entered it in a relatively depressed time (mid-1970's) for workers at their educational level. One might expect the responses from these two cohorts regarding their job satisfaction to differ widely. While differences were noted, they were not as great as might be expected.

Of the 1974 cohort, 96 percent said they were "very" or "somewhat" satisfied with their work (*Table 24*). Of these, over half were very satisfied and over two-fifths were somewhat satisfied. This compares with

an overall satisfaction rate ("very" and "somewhat") among the 1977 cohort of 86 percent. There was almost equal distribution between those who were "very" and those who were "somewhat" satisfied. Only four percent of the 1974 cohort, but 14 percent of the more recent graduates were not at all satisfied. In both cohorts there were virtually no differences between the satisfaction levels of men and women.

TABLE 24

Overall Job Satisfaction, by Sex

(In percentages)

Level of Job Satisfaction	1977 Cohort			1974 Cohort		
	Total	Men	Women	Total	Men	Women
Very	44	44	43	57	57	56
Somewhat	42	43	42	39	39	39
Not at all	14	13	15	4	4	5

Occupation and Level of Satisfaction

Level of job satisfaction for both cohorts differed more by type of occupation than by age or sex (*Table* 25). The two cohorts had a somewhat similar pattern of satisfaction, although proportionately more older than younger workers in most occupations were very satisfied. Over 70 percent of the business owners in both cohorts were "very" satisfied, whereas under 25 percent of the semi- or unskilled workers reported a high level of satisfaction.

Other occupations with high proportions of very satisfied workers in the 1977 cohort were educator, mathematician/scientist, and engineer. For the 1974 cohort, administrator and salesperson also had high proportions of very satisfied workers, as did health service worker, educator, accountant, artist, and mathematician/scientist.

Among the older workers, administrators were especially more satisfied than among the younger workers, 68 percent compared with 45 percent. Very probably the promotion of the older workers to higher levels of responsibility had increased their level of job satisfaction. Salespersons also were considerably more satisfied with their jobs over time.

On the other hand, the younger mathematicians/scientists and engineers were more satisfied than their older counterparts. Possibly those who are most successful tend to be promoted out of entry-level engineering

and science positions into management. Hence, those who entered the labor force in the mid-1960's and were still working in science or engineering jobs were probably the least successful of these graduates. They probably had made the smallest amount of career progress and were therefore least satisfied.

Among both cohorts, the largest proportions of those reporting high levels of dissatisfaction with their jobs were the semi- or unskilled workers: half or more of that occupation in each cohort. For the 1974 cohort, this was the only occupation with a high level of job dissatisfaction. For the 1977 cohort, a large proportion of office workers (38 percent) also indicated they were not at all satisfied with their jobs.

The contrast in levels of satisfaction and dissatisfaction of office workers between the two cohorts raises questions regarding possible differences in job structure after nine years of work experience or compensating factors which older workers may have developed.

The lower level of job satisfaction generally among younger workers would be expected, since most evidence shows that younger workers have always been more dissatisfied than older workers (U.S. Department of Labor, 1974). New entrants to the labor force are still experimenting, still selecting careers. They hold less responsible and lower paying jobs. They are generally supervised rather than supervising. Much of this will change for most workers as they progress along their career paths.

Time of Career Selection

Some occupations require more specific training than others and, therefore, must be prepared for early in one's educational career. For instance, in most states to become an elementary teacher requires a bachelor's degree in education. Therefore, a person aspiring to be a teacher must choose this occupation before college or early in the college years. Other occupations such as sales, which require more general preparation, would not have to be chosen, necessarily, so far in advance.

Overall, 80 percent of the more recent graduates (1977 cohort) chose their career before or during college (*Table 26*). For many of these graduates, this choice probably led to what was both their first and current occupation. Those occupations requiring more specific training—educator, engineer, health service worker, and accountant—tended to be chosen earlier. Those occupations which were chosen later tended to be more general in nature, not normally entry-level, or sub-professional.

TABLE 25

Overall Job Satisfaction, by Occupation

(In percentages)

Occupation	1977 Cohort			1974 Cohort		
	Very Satisfied	Somewhat Satisfied	Not Satisfied	Very Satisfied	Somewhat Satisfied	Not Satisfied
Accountant	41	46	13	54	42	3
Office worker	17	44	38	33	56	11
Administrator	45	44	10	68	30	2
Business owner	72	22	5	77	21	1
Salesperson	46	37	17	63	34	3
Mathematician/scientist	54	38	8	50	47	3
Health service worker	44	45	11	58	40	2
Engineer	49	43	8	46	50	4
Educator	56	38	6	56	41	3
Social worker/counselor	42	40	18	45	48	7
Artist	44	46	10	53	41	6
Skilled worker	29	56	15	36	50	14
Semi-/unskilled worker	10	42	48	23	23	54

TABLE 26

Occupation, by Time of Selection

(In percentages)

Occupation	1977 Cohort			1974 Cohort		
	Before College	During College	After College	Before College	During College	After College
All occupations	33	47	20	21	34	45
Accountant	24	64	13	18	54	28
Office worker	24	44	33	6	22	71
Administrator	20	44	35	8	37	54
Business owner	18	47	34	10	28	62
Salesperson	18	50	33	5	22	72
Mathematician/scientist	25	56	18	7	40	53
Health service worker	36	54	10	50	34	15
Engineer	47	45	9	47	30	22
Educator	54	41	5	42	43	15
Social worker/counselor	20	51	28	9	31	60
Artist	29	48	23	21	36	43
Skilled worker	24	45	31	9	22	69
Semi-/unskilled worker	27	41	31	9	0	91

Among the more frequent after-college choices were administrator, business owner, office worker, sales, social worker, counselor, and skilled, semi-skilled, and unskilled worker.

The 1974 cohort was asked when they chose their *current* occupation. Since many of these respondents may have held several jobs during the period from graduation to 1974, it would be expected that a considerably higher proportion would have chosen their current occupation after college than was found in the more recent cohort. And this was the case—45 percent of the 1974 cohort compared with 20 percent of the 1977 group made the choice after college. However, the pattern observed for the 1977 cohort of occupations requiring specific training being chosen earlier also pertained for the 1974 respondents.

For the younger graduates, there was a considerable difference in job satisfaction in terms of when the career choice was made (*Table 27*). Almost one-half of those who made their career choice before college but only slightly more than one-third of those who made it after college were very satisfied with their job. Among those who made their choice before or during college, only about one in eight were not at all satisfied while, of those who made their choice after college, one in five were not satisfied. For the older graduates, the time of choice of their current occupation was not a significant factor at any of the levels of job satisfaction.

The fact that the older workers had more opportunity to change into more satisfactory occupations after college may account both for their high level of satisfaction and the fact that the time of choice was not a factor in this satisfaction. Among the younger cohort, entering the somewhat tight labor market of that time, the dissatisfied workers who indicated they had *chosen* their careers later really may not have chosen at all. If they could not get the jobs they wanted, they may have been forced into unsatisfying jobs or careers.

TABLE 27

Job Satisfaction, by Time of Occupational Selection

(In percentages)

Job Satisfaction	1977 Cohort			1974 Cohort		
	Before College	During College	After College	Before College	During College	After College
Very satisfied	48	44	36	60	58	55
Somewhat satisfied	40	43	43	36	39	40
Not satisfied	12	13	21	3	3	5

9 Attitudes toward Work

ONE MEASUREMENT of job satisfaction is an individual's attitude toward his or her job. Respondents in both cohorts were asked to indicate their feelings regarding a series of attitudinal statements (*Table 28*). Overall, the 1977 respondents had somewhat fewer positive attitudes than the 1974 respondents, just as their job satisfaction was somewhat lower. However, again the differences were not as great as might be expected.

Respondents from both the 1977 and 1974 cohorts were relatively satisfied with their career progress to date, with the older graduates somewhat more positive about their current situation. Almost 60 percent of the 1977 cohort and 64 percent of the 1974 cohort indicated their satisfaction. For the 1977 group, this was the most strongly positive attitude among those investigated.

Current job progress was considerably more satisfactory than prospects for the future. This was the case for both cohorts, although more so for the younger graduates. Fewer than half of the 1977 cohort felt that the current job fit their long-range goals, offered good prospects for further advancement, and was one in which they would like to remain for the foreseeable future.

Since the 1974 cohort had as many as nine years of experience in the labor force after graduation, they should be more established in their careers and be further along in their long-range plans than the younger respondents. Fifty-four percent of the older workers, compared with 41 percent of the younger group, said their job fit their long-range goals.

The proportions between the two cohorts were closer with respect to future prospects for advancement. Slightly more than half of the 1974 cohort compared with 46 percent of the 1977 group felt their future prospects were good.

Younger workers were not as settled in their jobs, however. Just under half would like to remain with their current employer whereas 68 percent of the older workers would. For the older workers, wishing to remain with the current employer was the most strongly positive attitude of those included. Obviously, some other factors must be influencing the older workers' desire to remain with the current employer.

A surprising 55 percent of the 1977 cohort were satisfied with the quality of interaction with their supervisor. Despite the additional work experience of the 1974 cohort, the proportion satisfied with their supervisor was not much higher (59 percent).

Differences Between Men and Women

There was little difference between men and women in either cohort regarding satisfaction with career progress to date. However, the men in both cohorts were much more likely than the women to have jobs which fit their long-range goals. Their jobs were also more likely to offer good prospects for further advancement.

TABLE 28

Attitudes Affecting Job Satisfaction, by Sex

(Percentages responding in affirmative)

Attitude	1977 Cohort			1974 Cohort		
	Total	Men	Women	Total	Men	Women
Satisfied with career progress to date	59	60	58	64	65	62
Job fits long-range goals	41	46	37	54	57	46
Job offers good future prospects for further advancement	46	58	36	51	58	32
Would like to remain with current employer for foreseeable future	48	51	45	68	70	64
Satisfied with quality of interaction with supervisor	55	56	55	59	58	61

It is commonly argued that women do not proceed as rapidly along their career paths as men because they accrue less experience by dropping out of the work force to raise a family. This argument appropriately fits the women's situation in the 1974 cohort, but is less likely to be a reason for sex differences in the 1977 cohort. Other possible causes must be considered, such as motivational differences, discriminatory employment practices, or sex differences in career choices, even though men and women attend the same schools and, in many instances, major in the same fields.

Since women did not view their prospects as affirmatively as men, it is not surprising that fewer women in both cohorts would like to remain with their current employer. However, about the same proportion of the younger men and women and slightly more women than men in the older group were satisfied with the quality of interaction with their supervisor.

Differences Between Occupations

In the majority of occupations, there were more workers satisfied than dissatisfied with their career progress to date, with most proportions in the range of 60 to 70 percent satisfied (*Tables A-14* and *A-15*). This was the case for both cohorts, although the older workers generally had slightly higher proportions. Exceptions were the younger mathematicians/scientists, engineers, educators, and social workers/counselors who were more satisfied than their more experienced counterparts.

In both cohorts, the only occupations with more dissatisfied than satisfied workers with respect to career progress to date were unskilled or semi-skilled worker, skilled worker, and office worker. In these occupations, satisfaction with career progress ranged from 44 percent of the older office workers to as low as ten percent of the younger semi- and unskilled workers. In contrast, the highest level of satisfaction with career progress was found among the 1974 administrators, with 80 percent indicating satisfaction. Among the younger workers, the most satisfied were the mathematicians/scientists (74 percent) and educators (71 percent).

The fit of current job to long-range goals received fewer affirmative responses. Only business owner in both cohorts and administrator in the 1974 cohort had proportions of over 60 percent reporting that their job fit their long-range goals. In all other occupations the proportions were below 60 percent, with the majority in the 40–50 percent or lower range. Except for business owners and mathematicians/scientists, larger pro-

portions of older than younger workers responded affirmatively. Although fewer than one-third of the older office workers viewed their job as fitting their long-range goals, almost two-thirds wanted to remain with their current employer.

Administrators, salespersons, accountants, and engineers in both cohorts were especially likely to feel their job offered good prospects for advancement and to want to remain with their current employer. Only about one-third or fewer educators, social workers/counselors, and health service workers in both cohorts viewed their job as having good prospects for advancement; however, considerably higher proportions wanted to remain with their current employer.

Compared to the other job attitudes, the proportions of respondents who were satisfied with the quality of interaction with their supervisor were relatively high regardless of occupation. Yet, as will be shown, this aspect is not a very important component of job satisfaction.

Overall, the occupations of administrator, salesperson, engineer, accountant, and mathematician/scientist had the highest proportions of affirmative responses to the various job attitudes, while the occupations of office worker, skilled worker, and semi- or unskilled worker had the lowest.

Job Attitudes and Level of Job Satisfaction

How do these job attitudes relate to level of job satisfaction? *Table 29* shows the proportions of respondents very, somewhat, and not satisfied with their current job who answered affirmatively to each of the five job attitudes investigated. Generally, the responses were as would be expected. Two-thirds or more of the very satisfied workers answered affirmatively to the five job attitudes. The most positive attitudes were satisfaction with career progress to date (both cohorts) and, for the 1974 cohort, desire to remain with the current employer. The latter attitude is probably more a reflection of, rather than a reason for, job satisfaction.

Conversely, only small proportions of those dissatisfied with their current job answered affirmatively regarding any of the job attitudes. One slight deviation was that one-fourth of those not satisfied with their job still were satisfied with the quality of interaction with their supervisor. This was the case for both cohorts. The somewhat satisfied workers had middling proportions answering affirmatively to the individual attitudes.

TABLE 29

Attitudes Affecting Job Satisfaction, by Level of Satisfaction

(Percentages responding in affirmative to Attitudes)

Attitude	Level of Job Satisfaction[1]					
	1977 Cohort			4 Cohort		
	Very Satisfied	Somewhat Satisfied	Not Satisfied	Very Satisfied	Somewhat Satisfied	Not Satisfied
Satisfied with career progress to date	89	44	5	82	42	13
Job fits long-range goals	68	24	4	73	30	8
Job offers good future prospects for further advancement	65	37	10	64	37	11
Would like to remain with current employer for foreseeable future	75	33	3	84	50	16
Satisfied with quality of interaction with supervisor	70	50	24	69	48	26

[1] Level of satisfaction with current job. Table reads: Of those 1977 respondents "very satisfied" with their current job, 89 percent responded affirmatively regarding career progress to date.

Similar patterns were observed for both cohorts, although the dissatisfied older workers tended to have somewhat more positive attitudes than the dissatisfied younger workers. This was particularly so for career progress to date and wishing to remain with the current employer. Reasons such as family responsibilities and reluctance to lose job benefits accrued over time may reinforce the older worker's desire to remain with the current employer.

10 Job Characteristics and Satisfaction

VARIOUS CHARACTERISTICS of a job influence satisfaction or dissatisfaction. Among these are utilization of skills, status or prestige, salary, degree of responsibility, job level, and autonomy. As positive features of a job, each contributes toward satisfaction, and the greater the number of positive features, the higher the degree of satisfaction.

Job Level and Status

Since those in the older cohort had been in the job market longer, one would expect them to be working at a higher level and have more work responsibility than their younger counterparts. Indeed, as *Table 30* demonstrates, proportionately more graduates in the 1974 cohort than in the 1977 cohort said their work was at a professional level and they had policy- and decision-making responsibility. Surprisingly, the difference between the two cohorts for working at a professional level was not very large: 70 percent of the older workers (1974 cohort) and almost two-thirds of the entry-level workers (1977 cohort). For having policy- and decision-making responsibility, the proportional difference was much greater: three-fifths of the 1974 cohort but less than half of the 1977 group. This implies that "professional" means something different to entry and experienced workers.

It also may mean something different to men and women, since the women in both cohorts were more likely than the men to say they worked at a professional level, even though women perceived themselves to be less well paid and were less likely to have decision-making responsibility, to set their own hours, to design their own work programs, to have sufficient prestige, or to be satisfied with their career progress to date. Another

explanation could be the fact that the most popular occupation for women in both cohorts was teaching which is generally considered professional-level work, although it usually does not offer high levels of decision-making responsibility, autonomy, or prestige.

Over two-thirds of the older graduates but slightly fewer than half of the younger ones felt they had sufficient status or prestige in their job. Women in both cohorts were somewhat less likely than their male counterparts to feel they had enough status and prestige.

Autonomy, Income, and Utilization of Skills

Although few graduates in either cohort had the flexibility to set their own hours, many designed their own programs. In both instances, the older graduates had higher proportions than the more recent ones and the men higher than the women.

TABLE 30

Job Characteristics Affecting Satisfaction, by Sex

(Percentages responding in affirmative)

Characteristic	1977 Cohort			1974 Cohort		
	Total	Men	Women	Total	Men	Women
Working at professional level	64	60	67	70	68	74
Have policy- and decision-making responsibility	46	48	44	61	65	47
Have sufficient status or prestige in job	48	51	47	68	69	63
Set own work hours	16	22	11	30	34	17
Design own work program	43	44	42	61	63	54
Skills fully utilized in job	30	25	33	33	31	40
Well paid for work compared with:						
• persons at same job level in same place of employment	34	37	32	39	40	35
• persons at same job level in other work settings	34	33	34	39	41	32
• persons in general with same amount of education	30	36	27	41	46	27

Generally, most of the respondents did not feel well paid compared with anyone, but more of the older men than the younger felt well paid. The pattern was similar for the older and younger women, but there was less of a difference.

Regardless of experience in the labor force, few college-educated workers felt their skills were being fully utilized on the job. More women than men responded affirmatively about this job characteristic, although the proportions were still relatively low. Of course, the skills referred to are not only college prepared, but also skills learned outside of college or innate competencies acquired without any formal training (Solmon, Bisconti, & Ochsner, 1977).

Those in closely-related jobs were much more likely than those in unrelated jobs to say their skills were fully utilized (*Table 31*). However, even among those who had closely-related jobs, over half of the respondents in both cohorts said their skills were not fully used. For those who were in jobs not related to their major, nine-tenths of the 1977 respondents and three-fourths of the 1974 respondents said their skills were not fully utilized.

Utilization of skills is a very important component of overall job satisfaction. However, educators, counselors, and employers are clearly missing the boat if they believe they are achieving this goal *simply* by matching major to job title (chemistry-chemist) or by placing graduates in jobs which allow them to use the content of their major courses.

Differences Between Occupations

Job level differed not only by sex and number of years in the labor force, but also by occupational category (*Tables A-16* and *A-17*). Al-

TABLE 31

Skills Fully Utilized in Job, by Relatedness of Job to Major

(In percentages)

Skills Fully Utilized	1977 Cohort			1974 Cohort		
	Closely Related	Somewhat Related	Not Related	Closely Related	Somewhat Related	Not Related
Yes	44	14	10	45	24	23
No	56	86	90	55	76	77

though, overall, proportionately more older than younger graduates said they worked at a professional level, the younger business owners, mathematicians, scientists, and educators were more likely than their more experienced counterparts to say their job was professional. Not surprisingly, for both samples, those most likely to view their occupations as professional included health service workers, educators, artists, accountants, mathematicians, scientists, engineers, and administrators. The older workers tended to say social work was professional, but considerably fewer younger workers tended to think so. Those occupations considered nonprofessional by both cohorts included office work and skilled, semi-, and unskilled work.

The occupation most likely to have policy- and decision-making responsibility, regardless of labor force experience, was business owner, of course, because business owners are their own bosses. Administrators, also by definition, were likely to have policy- and decision-making responsibility, but they did not tend to have any more freedom to set their own hours. Across most occupations, the older graduates more than the more recent ones were able to set their own hours (especially salespeople), and felt they had sufficient status or prestige. In the lower-level jobs—skilled, semi-, and unskilled work—the younger workers (although very few) were more likely than the older workers to say they had decision-making responsibility and were able to design their own work program.

On the average, for both cohorts, under 50 percent in any occupation felt they were well paid compared with people at the same job level at the same or different place of employment or with people in general with the same amount of education. Exceptions, primarily among the 1974 cohort and more often with respect to persons in general with the same amount of education, were administrators, engineers, accountants, salespersons, and mathematicians/scientists.

Use of skills also varied considerably by occupation. Over half of the recent graduates who were educators said their skills were fully utilized, but only six percent of the office workers and three percent of the semi- or unskilled workers felt they fully used their skills. The pattern for the older cohort was similar to that of the younger group except that the proportions who said they used their skills fully were slightly higher among the older cohort. With the exception of mathematician/scientist, educator, social worker/counselor, artist, and skilled, semi-, or unskilled worker, the older graduates were more likely than the more recent ones to feel their skills were being used fully. However, none of the proportions was very high.

Links to Job Satisfaction

What, if any, are the links between job satisfaction and status, autonomy, utilization of skills, and income? Does working at a professional level mean that workers are satisfied with their jobs?

For the most part, working at a professional level would appear to be an important component of job satisfaction. Over three-fourths of the very satisfied graduates and almost two-thirds of the somewhat satisfied ones said they were working at a professional level (*Table 32*). However, in itself, it does not guarantee job satisfaction, for 28 percent of the younger

TABLE 32

Job Characteristics Affecting Satisfaction, by Level of Satisfaction

(Percentages responding in affirmative to Characteristics)

Characteristic	Level of Job Satisfaction[1]					
	1977 Cohort			1974 Cohort		
	Very Satisfied	Somewhat Satisfied	Not Satisfied	Very Satisfied	Somewhat Satisfied	Not Satisfied
Working at professional level	80	58	28	76	63	38
Have policy- and decision-making responsibility	54	43	26	70	51	33
Have sufficient status or prestige in job	69	38	11	82	51	24
Set own work hours	20	13	8	35	23	26
Design own work program	50	41	25	66	54	47
Skills fully utilized in job	50	17	4	46	17	4
Well paid for work compared with:						
• persons at same job level in same place of employment	40	32	25	43	34	27
• persons at same job level in other work settings	41	30	20	46	31	31
• persons in general with same amount of education	40	26	11	49	32	24

[1] Level of satisfaction with current job. Table reads: Of those 1977 respondents "very satisfied" with their current job, 80 percent responded affirmatively to the statement, "I am working at a professional level."

and 38 percent of the older graduates who were dissatisfied with their jobs said they were working at a professional level.

Having policy-making responsibility and status were also closely associated with being very satisfied with the current job, especially for the older graduates.

Fewer (50 percent or less) very satisfied respondents set their own hours, designed their own work programs, used their skills fully, and felt well paid. Nevertheless, skills utilization was more highly correlated with job satisfaction than working at a professional level or having policy-making responsibility because there is a greater difference among those very, somewhat, and not satisfied in terms of using their skills than in terms of the other job characteristic variables. These relationships are discussed further in Chapter 14.

11 Occupational Choice and Job Satisfaction

ONE OF THE BENEFITS which may accrue from research studies of employment outcomes is a broadening of the horizons regarding occupational choice. Conventional wisdom places women in elementary teaching and men in business administration, engineering majors in engineering and accountants in accounting.

The experiences of many of the graduates making up the 1977 and 1974 cohorts challenge this stereotyping. It has been shown that relatedness of major to occupation is not necessary for job satisfaction nor does it guarantee job satisfaction. Moreover, the distribution of major fields by occupation, whether because of voluntary or involuntary reasons, is very broad.

Tables 33 through *41* provide insight into the job satisfaction of respondents whose occupational choices followed traditional as well as non-traditional patterns. (Only those occupational categories with ten or more respondents have been included.) In many cases, those who followed the traditional patterns were less satisfied than those who did not. The mavericks who make the unusual occupational choice are frequently small in number. For whatever reason—an exceptional commitment to a certain type of work or some other reason—the job satisfaction experienced by many of these mavericks gives encouragement to future classes of college graduates who will in the next few years face an employment market which may not provide the occupational choices planned. The finding that non-traditional occupational choices can be very satisfactory should be exceptionally useful to both students and counselors of students.

English and Other Arts and Humanities

Teaching was the primary employment outcome of both English and other arts and humanities majors and, for the younger cohort, teaching had the largest proportion of very satisfied workers. For the younger English majors, the next most frequent occupations were office worker and administrator, while for the other arts and humanities majors in the younger cohort, they were artist and office worker. Other than teaching, the largest proportions of satisfied English majors were found in sales and administration and, for the other arts and humanities majors, in administration and art.

For the older cohort, the situation was generally reversed, with the

TABLE 33

Job Satisfaction of English Majors, by Occupation

Occupation[1]	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Educator	63	86	57	55
Salesperson	11	16	45	38
Administrator	27	37	44	62
Artist	18	35	39	46
Office worker	41	25	12	28

[1] Tables 33 through 41 include only those occupations employing 10 or more respondents in both cohorts who majored in the field which is examined in the table.

TABLE 34

Job Satisfaction of Other Arts and Humanities Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Educator	148	138	52	50
Administrator	82	62	46	63
Artist	109	27	45	44
Salesperson	36	46	28	56
Social worker/counselor	17	14	18	36
Office worker	93	54	15	31

largest proportions of "very satisfied" for both English and the other arts and humanities majors found in administration. Teaching ranked second in very satisfied workers for English majors and sales for the other arts and humanities majors. Apparently satisfaction with teaching dissipates somewhat after a number of years.

Although liberal arts majors are commonly considered to be the antithesis of business, and employers frequently feel that graduates in these majors are not suited for the business world, the data appear to contradict this belief.

Economics and Other Social Sciences

Previous studies have found a tendency for social science majors to go into business occupations (Bisconti and Gomberg, 1975). The present study confirms this tendency, particularly for economics majors whose two primary occupational choices in both cohorts were administration and sales.

For the older economics majors, the proportions of very satisfied workers was high for both occupations (over 70 percent). For the younger, the proportion of very satisfied administrators was just 55 percent compared with 80 percent for sales. It is possible that the type of administrative job held by experienced workers is different from that held by entry-level workers, thus explaining the somewhat lower satisfaction among younger administrators.

The other social science majors had a much broader occupational distribution. Many of these occupations had similar, moderate proportions of very satisfied workers. Although small in numbers, those social scientists who became artists were the most satisfied group of social science majors in both cohorts. In the older cohort, sales and administration had about the same proportions of very satisfied workers as artists and with considerably larger numbers. Other occupations with fairly large proportions of very satisfied workers in both cohorts were educator, social worker/counselor, and mathematician/scientist.

Natural Sciences and Mathematics

The most frequent occupational outcomes for natural science majors were health service worker, especially for the younger cohort, and mathematician/scientist, followed by educator and administrator. For

TABLE 35

Job Satisfaction of Economics Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Salesperson	10	36	80	72
Administrator	29	54	55	80
Office worker	10	17	0	29

TABLE 36

Job Satisfaction of Other Social Science Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Artist	11	11	54	64
Educator	63	66	52	50
Social worker/counselor	100	36	45	56
Mathematician/scientist	14	26	43	54
Salesperson	29	66	41	64
Administrator	72	93	39	62
Office worker	77	52	22	38

TABLE 37

Job Satisfaction of Natural Science Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Salesperson	11	26	64	65
Educator	51	51	55	49
Mathematician/scientist	96	77	53	51
Health service worker	123	73	45	63
Engineer	22	28	45	43
Administrator	33	50	39	66
Office worker	21	13	14	46

mathematics majors, the most frequent outcomes were mathematician/scientist and educator.

Although it would be expected that the occupations of mathematician or scientist also would have the largest proportion of very satisfied workers, this was not the case. For both natural science and mathematics majors in the younger cohort, the occupation of mathematician/scientist had the third largest proportion of very satisfied workers. For the older natural science and mathematics majors it ranked fourth.

The largest percentage of satisfied science majors in the younger cohort were employed in sales and teaching jobs and the most satisfied mathematics majors were in engineering. For the older cohort, administration was the most satisfying occupation for both science and mathematics majors. Those still in closely-related jobs after nine years are probably disappointed that they were not promoted into management positions, hence the lower level of satisfaction.

TABLE 38

Job Satisfaction of Mathematics Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Engineer	13	16	77	69
Educator	75	63	55	54
Mathematician/scientist	117	76	53	46
Administrator	22	24	32	79

Vocational Majors

Although a business major is considered almost synonymous with being an administrator, the business majors who became administrators did not have the largest proportions of very satisfied workers in either cohort. Among the younger business majors, those working as mathematicians/scientists were the most satisfied; among the older, the most satisfied were educators. Both occupations had relatively small numbers of workers. A fairly broad spectrum of other occupations, including sales, administration, and accounting, were more frequent occupational outcomes and had relatively sizable proportions of satisfied business majors.

Education majors were much more narrowly distributed, with three-fourths of both cohorts employed in some area of education. Education occupations also had the largest proportion of very satisfied younger education majors. However, among the older cohort, the largest proportion of very satisfied workers with education majors was working as administrators, although the number was relatively small.

TABLE 39

Job Satisfaction of Business Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Mathematician/scientist	17	23	70	39
Educator	12	36	67	80
Salesperson	72	83	54	65
Administrator	123	184	51	67
Accountant	156	143	42	54
Office worker	59	54	22	26

TABLE 40

Job Satisfaction of Education Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Educator	355	227	60	58
Administrator	21	12	43	75

TABLE 41

Job Satisfaction of Engineering Majors, by Occupation

Occupation	Number Responding		Percentage Responding "Very Satisfied"	
	1977	1974	1977	1974
Engineer	171	207	47	46

Engineering majors also were distributed among only a few occupations. In the younger cohort, 80 percent of the engineering majors were employed in engineering jobs, leaving the other occupations with too few numbers to include. In the older cohort, the percentage of engineering majors in engineering was not quite as large—slightly below two-thirds, with administration the next largest occupational choice. The proportions of very satisfied engineers in engineering were middling for both cohorts—just under 50 percent.

In summary, most of the majors, with the exception of economics, education, and engineering, were distributed over a considerable number of occupations, usually with good proportions of very satisfied workers. The younger cohort tended to have somewhat lower proportions of satisfied workers. Administration, in particular, was a much more satisfactory occupation for the older than the younger workers. In contrast, education tended to lose in satisfaction over time, except for business majors.

12 Relatedness of Job to Major

IT IS BEING ARGUED that many recent college graduates can no longer find jobs related to their educational training. Foreign language and history majors end up as secretaries; education majors can get sales jobs but not teaching jobs; and so on. It is also believed that, because of the mismatch between education and job, growing numbers of college graduates are dissatisfied with their work. We already saw, however, that 86 percent of the 1977 cohort were at least somewhat satisfied with their jobs (*Table 24*) and younger workers have always shown less job satisfaction than older workers (U.S. Department of Labor, 1974). Of course, job satisfaction varied by occupation for the 1977 cohort, but it did also for the 1974 cohort (*Table 25*).

Contrary to conventional wisdom, the younger graduates were more likely than the older graduates to view their jobs as closely related to their majors (*Table 42*). Overall, 56 percent of the 1977 cohort said their jobs were closely related and only 46 percent of the 1974 cohort said so. The younger graduates are probably more likely than the older graduates to have closely-related jobs because they are more likely to be in entry-level positions and college prepares students more for their first jobs than for later jobs. Also, because respondents in the younger cohort graduated more recently, they are more likely than the older respondents to recall college studies and, thus, better able to see their application.

Occupational Differences

Just as job satisfaction varied by occupation for both groups, so did relatedness. Highly-related jobs were health service, education, accounting, and engineering. Jobs which tended to have no relationship to college course work were skilled, semi-, and unskilled work and, especially for the younger graduates, office work. Most occupations became less related over time, except for office work, administration, business propriety, and health service. Evidently, in these four areas, more job experience contributes to workers' opportunities to make better use of their college training.

Reasons for Lack of Relatedness

The most common reasons given by the 1974 cohort for being in jobs only "somewhat" or "not at all" related were voluntary (*Table* 43). Almost one-third, each, cited "Found job offering better chance for career advancement" or "First job was unrelated and I became interested in this type of work." For the 1977 cohort, however, the most common reasons

TABLE 42

Relatedness of Job to Major, by Occupation

(In percentages)

Occupation	1977 Cohort			1974 Cohort		
	Closely Related	Somewhat Related	Not Related	Closely Related	Somewhat Related	Not Related
All occupations	56	19	25	46	27	26
Accountant	80	11	8	78	13	9
Office worker	8	20	73	18	29	54
Administrator	34	29	36	38	34	28
Business owner	24	37	39	36	30	34
Salesperson	28	35	37	26	31	43
Mathematician/scientist	65	27	8	30	40	30
Health service worker	82	12	6	83	11	6
Engineer	74	23	3	65	31	4
Educator	90	6	4	79	14	7
Social worker/counselor	54	28	18	38	35	27
Artist	62	22	15	40	34	25
Skilled worker	23	23	54	4	26	70
Semi-/unskilled worker	4	15	81	4	0	96

TABLE 43

Reason Job Is Not Closely Related to Major

(In percentages)[1]

Reason	1977 Cohort			1974 Cohort		
	Total	Men	Women	Total	Men	Women
Voluntary						
First job was unrelated and I became interested in this type of work	23	23	22	30	30	30
Found job offering better chance for career advancement	21	22	20	32	34	21
Prefer line of work not closely related	11	12	11	24	24	26
Never planned to take a closely related job	14	14	14	21	22	20
Found better paying job	15	15	15	22	23	18
Tried closely related employment, but did not like	8	8	9	18	17	20
Joined family business	5	8	2	8	9	5
No longer in closely related job due to promotion	2	2	2	6	7	2
Involuntary						
Employment opportunities are scarce for people in jobs related to my major	50	41	57	22	19	35
Very few jobs are related to my major	*	*	*	20	18	29
Jobs related to major are not available where I live and I do not want to move	18	15	21	12	10	16
Limited in job selection by situation of spouse, family responsibilities	10	6	13	8	5	18
Could not get a closely related job, but would prefer one	36	30	40	8	7	14
Am in the military	4	8	1	5	6	1
Wanted part-time work, flexible hours	2	2	2	2	1	6
Wanted to work at home	2	4	1	4	4	4
Am on a temporary assignment	1	1	1	1	1	0

[1] Percentage of those in only somewhat or not related job giving reason.
* Item not on 1977 questionnaire.

given were involuntary. One-half of the more recent graduates indicated "Employment opportunities are scarce for people in jobs related to my major," and one-third cited "Could not get a closely-related job, but would prefer one." Nine or ten years out of college, those in jobs not closely related to their major tended to hold these jobs because they preferred them, but only two or three years out, they tended to hold them because they had little or no choice. The women of both cohorts were considerably more likely than the men to hold their not-closely-related jobs involuntarily.

The reasons for not holding closely-related jobs, however, varied substantially by major for both cohorts (*Tables A-18* and *A-19*). Although, overall, the 1974 group tended to give voluntary reasons, the most common reasons given by English and other arts and humanities majors were involuntary: "Very few jobs are related to my major" and "Employment opportunities are scarce for people in jobs related to my major." Similarly, although in the aggregate the 1977 cohort tended to give involuntary reasons for not holding closely-related jobs, engineering majors

TABLE 44

Voluntary or Involuntary Reasons Job Is Not Closely Related to Major, by Occupation

(In percentages)[1]

Occupation	1977 Cohort		1974 Cohort	
	Voluntary Reasons	Involuntary Reasons	Voluntary Reasons	Involuntary Reasons
All occupations	59	41	85	15
Accountant	62	39	90	9
Office worker	46	55	73	28
Administrator	71	29	92	8
Business owner	90	9	94	7
Salesperson	73	28	92	8
Mathematician/scientist	75	25	93	7
Health service worker	53	46	75	25
Engineer	69	31	86	14
Educator	53	46	77	24
Social worker/counselor	45	54	65	36
Artist	79	21	90	10
Skilled worker	62	38	77	23
Semi-/unskilled worker	32	66	48	52

[1] Percentage of those in only somewhat or not related jobs who gave voluntary or involuntary reasons.

gave "Prefer line of work not closely related" most often. Business majors from the younger cohort cited voluntary and involuntary reasons almost equally.

Of those recent college graduates in only somewhat- or not-closely-related jobs, 41 percent said the reason was an involuntary one (*Table 44*). Only 15 percent of their older counterparts, however, gave an involuntary reason. For both groups, the largest proportions in unrelated jobs involuntarily were semi- or unskilled workers. Two-thirds of the younger and half of the older semi- or unskilled workers gave involuntary reasons for being in these jobs.

Among the younger graduates, about half of the office workers, social workers/counselors, health service workers, and educators also gave involuntary reasons for being in jobs not closely related to their major. The older graduates in these same occupations tended to give involuntary reasons more frequently than those in other occupations, but the proportions were one-third or below. Least likely to give involuntary reasons for being in an unrelated job were business owners, mathematicians, scientists, salespersons, administrators, and artists in both cohorts and accountants in the older cohort. However, in every occupation the younger graduates were more likely than the older graduates to feel they were pushed into unrelated or only somewhat-related jobs.

Voluntary vs. Involuntary Reasons

Although proportionately fewer in the 1977 cohort than in the 1974 cohort were very satisfied, overall, level of satisfaction for both groups depended more on whether the job was voluntarily or involuntarily somewhat or not related than on degree of relatedness. *Table 45* shows the satisfaction levels of respondents of each sex from each cohort according to the degree of relatedness of their job to their major. In addition, those who were not in closely-related jobs have been subdivided according to whether they voluntarily or involuntarily held these less related jobs.

For the older cohort, job satisfaction did not vary much by whether the job was closely related, somewhat related, or not related, as long as those in the "somewhat" or "not" related categories were holding their jobs voluntarily. However, there was a significant drop in job satisfaction for those holding somewhat-related jobs involuntarily and an even greater drop for those holding not-related jobs involuntarily. Women were even more strongly affected than men.

TABLE 45

Job Satisfaction, by Relatedness of Job to Major

(In percentages)

Relatedness of Job to Major	Level of Job Satisfaction											
	1977 Cohort						1974 Cohort					
	Men			Women			Men			Women		
	Very	Somewhat	Not	Very	Somewhat	Not	Very	Somewhat	Not	Very	Somewhat	Not
Closely related	55	38	6	54	39	7	61	37	2	61	36	3
Somewhat related:												
Voluntary	50	43	7	47	43	10	60	38	2	55	43	2
Involuntary	13	56	31	15	62	24	32	59	9	34	55	10
Not related:												
Voluntary	42	48	10	39	45	16	58	38	4	56	39	5
Involuntary	10	44	46	8	40	52	31	48	21	17	52	32

For the more recent cohort those in closely-related jobs were clearly the most satisfied and those in jobs that were not closely related were less satisfied even if they were holding those jobs voluntarily. However, the differences in satisfaction were very marked for the younger cohort in unrelated jobs, depending on whether they were holding those jobs voluntarily or involuntarily. About half of those holding unrelated jobs involuntarily were not at all satisfied.

These findings indicate that, after nine years in the labor force, satisfaction is much less dependent on the link between course content and job requirements. Apparently, many other factors affect job satisfaction after some years of work. In the early work years, the ability to use course content is clearly an important factor in job satisfaction. However, the reason for lack of educational relatedness in a job, i.e. a voluntary versus an involuntary reason, is an even more important factor.

Unlike the older graduates, most of the more recent graduates gave involuntary reasons for holding a somewhat- or not-related job. A particularly frequent response was that employment opportunities are scarce for people wanting jobs related to their major (*Table 46*). Only 24 percent of those giving this reason said they were very satisfied with their not-closely-related job. Of those younger graduates who gave voluntary reasons, most said they became interested in their first, unrelated, job and/or they found a job offering a better chance for advancement. Of these, 43 percent who gave the first reason and 58 percent who gave the second were very satisfied.

In general, then, the older graduates seem to say they were pulled out of related jobs by better prospects, while the more recent graduates felt pushed out of or prevented from obtaining related jobs. The extent that the older graduates may be rationalizing their circumstances is not known.

Income, Relatedness, and Job Satisfaction

The 1974 follow-up of the 1961 freshmen revealed clearly that, regardless of the relationship between job and major, higher-paying jobs are more satisfying (Solmon, Bisconti, and Ochsner, 1977). For the 1977 cohort, the same effect was observed, although the dollar ranges were not as great. As *Tables 47* and *48* show, the lowest mean incomes were associated with those respondents in both cohorts who were not satisfied with their jobs, while the highest were associated with those who were very satisfied.

TABLE 46

Job Satisfaction, by Reason Job Is Not Closely Related to Major

Reason	1977 Cohort		1974 Cohort	
	Number Giving Reason	Percent Very Satisfied	Number Giving Reason	Percent Very Satisfied
Voluntary				
First job was unrelated and I became interested in this type of work	387	43	755	52
Found job offering better chance for career advancement	352	58	707	65
Prefer line of work not closely related	186	54	615	58
Never planned to take a closely related job	235	43	548	58
Found better paying job	251	45	509	56
Tried closely related employment, but did not like	139	46	445	53
Joined family business	89	52	177	72
No longer in closely related job due to promotion	36	44	126	56
Involuntary				
Employment opportunities are scarce for people in jobs related to my major	857	24	605	38
Very few jobs are related to my major	*	*	566	43
Jobs related to major are not available where I live and I do not want to move	307	24	335	38
Limited in job selection by situation of spouse, family responsibilities	162	13	291	30
Could not get a closely related job, but would prefer one	613	10	277	15
Am in the military	67	33	124	71
Wanted part-time work, flexible hours	36	28	111	39
Wanted to work at home	38	47	104	56
Am on a temporary assignment	17	18	24	38

* Item not included on 1977 questionnaire.

TABLE 47

Income, by Job Satisfaction and Relatedness of Job to Major: Men

Job Satisfaction	1977 Cohort Mean Income in 1977			1974 Cohort Mean Income in 1974		
	Closely Related	Somewhat Related	Not Related	Closely Related	Somewhat Related	Not Related
Very satisfied	$13,117	$13,528	$12,708	$18,746	$20,267	$19,862
Somewhat satisfied	12,506	12,091	11,058	16,439	16,480	15,757
Not satisfied	11,607	10,889	9,205	15,550	15,776	11,851

TABLE 48

Income, by Job Satisfaction and Relatedness of Job to Major: Women

Job Satisfaction	1977 Cohort Mean Income in 1977			1974 Cohort Mean Income in 1974		
	Closely Related	Somewhat Related	Not Related	Closely Related	Somewhat Related	Not Related
Very satisfied	$10,448	$12,074	$10,228	$11,381	$13,187	$13,746
Somewhat satisfied	9,925	9,038	8,551	11,037	12,353	10,223
Not satisfied	9,682	8,593	7,264	10,700	12,000*	8,897

* Fewer than 10 observations.

For the 1977 cohort, high income was also associated with the degree of job relatedness with one exception—those respondents who were in a somewhat-related job but were very satisfied with their job. This group had the highest mean income. For all others, the degree of satisfaction, degree of relatedness, and income were directly associated: the second highest mean income was reported by the very satisfied respondents in a closely-related job and the lowest mean income was reported by the respondents who were not satisfied and were not in a related job.

The income of the 1974 cohort also increased with the level of job satisfaction, however it was less associated with degree of relatedness than was observed for the 1977 cohort. Among the very satisfied older respondents, those in somewhat-related or unrelated jobs earned more than those in closely-related jobs. Also, those who were in somewhat-related jobs earned more than those in closely-related jobs regardless of degree of satisfaction. However, those who were not satisfied but had closely-related jobs tended to earn considerably more than those who were not satisfied and had unrelated jobs.

In general, the income of the more recent graduates varied less than that of the older graduates across satisfaction levels for those within a relatedness category. Women's salaries were substantially lower than men's in both cohorts, but the income patterns associated with satisfaction and relatedness were similar for both men and women.

13 Underemployment

WHILE UNEMPLOYMENT has been an increasing concern in the 1970's for lesser-educated youth, especially black teenagers, underemployment has been alleged to be the college-educated worker's main problem (Berg, 1971; O'Toole, 1975; Freeman, 1976). Underemployment is usually defined as not having a job related to one's education. It has been speculated that, if the extent of underemployment keeps increasing, dissatisfied college-educated workers may grow hostile and revolt against the 20 percent who have the elite "good" jobs (O'Toole, 1975).

The 1977, but not the 1974, cohort was asked directly: Considering your ability, education, and experience, are you underemployed in your current position? Of those in the 1977 cohort employed full-time, 56 percent said "no" and 44 percent said "yes" (*Table 49*). Of those who answered affirmatively, almost three out of four said "would prefer a more challenging position." The remaining one-fourth preferred not to change jobs despite being underemployed. Perhaps geographic immobility, family obligations, or other nonjob-related reasons restrict some of the underemployed from seeking more challenging work. Although women were slightly less inclined than men to feel underemployed, the differences between men and women in their perceptions of underemployment were not very great.

TABLE 49

Perceptions of Underemployment, by Sex: 1977 Cohort

(In percentages)

Underemployment Status	Total	Men	Women
Not underemployed	56	54	59
Underemployed, but for personal reasons prefer to remain in this or a similar position	12	13	11
Underemployed, would prefer a more challenging position	32	33	30

Differences by Major and Occupation

Differences among majors and occupations were much greater, however. Majors with the highest proportions saying they were *not* underemployed were education, engineering, and economics (*Table 50*). Majors in English, other arts and humanities, and the social sciences (other than economics) were most likely to feel they were underemployed with almost 40 percent of each group wanting a more challenging position.

Variation by occupation was even more salient (*Table 51*). Eighty-three percent of the educators said they were not underemployed, in contrast to only 3 percent of the semi- or unskilled workers, 12 percent of the office workers, and 28 percent of the skilled workers. In the remaining occupational areas, from 50 to 70 percent of the respondents said they were not underemployed.

Those who said they were underemployed and would prefer a more challenging position ranged from lows of 10 percent for the educators and 15 percent for the business owners to highs of 70 percent for office workers and 75 percent for semi- and unskilled workers. Approximately one-fourth of the mathematicians/scientists, health service workers, and engineers and one-third of the accountants, administrators, salespersons, social workers/counselors, and artists also would prefer a more challenging position.

Satisfaction, Relatedness, and Underemployment

While it is not possible to determine cause and effect, it is clear from *Table 52* that there is a direct relationship between the degrees of satisfaction and underemployment. Well over three-fourths of those who were very satisfied also perceived themselves as not being underemployed,

TABLE 50

Perceptions of Underemployment, by Major: 1977 Cohort

(In percentages)

Underemployment Status	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering
Not underemployed	50	47	60	48	56	56	56	76	61
Underemployed, but for personal reasons prefer to remain	11	15	8	13	10	14	11	7	11
Underemployed, would prefer more challenging position	38	38	32	39	35	30	33	17	28

TABLE 51

Perceptions of Underemployment, by Occupation: 1977 Cohort

(In percentages)

Underemployment Status	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/ Scientist	Health Service Worker	Engineer	Educator	Social Worker/ Counselor	Artist	Skilled Worker	Semi-/ Unskilled Worker
Not underemployed	64	12	54	63	53	68	67	62	83	53	51	28	3
Underemployed, but for personal reasons prefer to remain	6	18	11	22	12	7	7	10	7	12	15	25	22
Underemployed, would prefer more challenging position	31	70	34	15	36	24	26	28	10	35	34	47	75

while fewer than 10 percent of the very satisfied felt underemployed and wanted a more challenging position. Conversely, among those not satisfied, only 14 percent felt they were not underemployed, while well over three-fourths said they were and preferred a more challenging position.

Those who were somewhat satisfied with their current job had almost equal proportions not underemployed and underemployed and wanting a more challenging position: approximately 40 percent in each group.

There was very little difference between the perceptions of men and women, although women were slightly more affirmative regarding both satisfaction and employment status.

TABLE 53

Perceptions of Underemployment, by Relatedness of Job to Major: 1977 Cohort

(In percentages)

Underemployment Status	Closely Related	Somewhat Related	Not Related
Not underemployed	73	43	30
Underemployed, but for personal reasons prefer to remain	18	13	18
Underemployed, would prefer more challenging position	19	44	52

Looking at perceptions of underemployment by relatedness of job to major (*Table 53*), a similar pattern was observed, although it was not quite as positive. Of those in closely-related jobs, almost three-fourths felt they were not underemployed while about one-fifth felt they were and wanted a more challenging position. Of those in jobs not related to their major, only 30 percent said they were not underemployed while half said they were and wanted a more challenging position. Again, the middling group—those who were in somewhat-related jobs—had almost equal proportions (just over 40 percent) of not underemployed and underemployed and preferring a more challenging job.

Combining the variables of job satisfaction and relatedness of major to job provided an even stronger pattern of relationship (*Table 54*). Eighty-eight percent of those who were in closely-related jobs and were

TABLE 52

Perceptions of Underemployment, by Level of Job Satisfaction: 1977 Cohort

(In percentages)

Underemployment Status	Total			Men			Women		
	Very Satisfied	Somewhat Satisfied	Not Satisfied	Very Satisfied	Somewhat Satisfied	Not Satisfied	Very Satisfied	Somewhat Satisfied	Not Satisfied
Not underemployed	81	45	14	77	42	11	84	46	16
Underemployed, but for personal reasons prefer to remain	10	15	5	12	16	5	9	14	5
Underemployed, would prefer more challenging position	9	40	80	11	42	84	7	39	78

TABLE 54

Perceptions of Underemployment, by Relatedness of Job to Major and Job Satisfaction: 1977 Cohort

(In percentages)

Underemployment Status	Closely Related			Somewhat Related			Not Related		
	Very Satisfied	Somewhat Satisfied	Not Satisfied	Very Satisfied	Somewhat Satisfied	Not Satisfied	Very Satisfied	Somewhat Satisfied	Not Satisfied
Not underemployed	88	59	32	74	33	9	60	26	7
Underemployed, but for personal reasons prefer to remain	6	11	6	13	16	4	25	22	5
Underemployed, would prefer more challenging position	6	30	62	14	51	87	15	52	88

very satisfied did not feel underemployed. In contrast, eighty-eight percent of those who were in unrelated jobs and who were not satisfied perceived themselves to be underemployed and wanted a more challenging position.

For the 1977 cohort, the more related the job to major and/or the more satisfied the respondents were in their jobs, the more likely they were to say they were not underemployed. However, it is clear that holding a related job does not necessarily result in a perception of full employment. Some jobs which enable the utilization of what was learned in college still are characterized by underemployment. Perhaps we are observing again the need to utilize a broader array of personal competencies than just those learned in college. Similarly, some jobs perceived as not providing full employment are satisfying to some individuals.

14 Determinants of Satisfaction

CLEARLY, MANY job attitudes correlate with overall job satisfaction. For both cohorts greater job satisfaction also means satisfaction with career progress, perceiving that one holds a professional-level job, wanting to remain with one's current employer for the foreseeable future, satisfaction with quality of supervisor interaction, feeling one has sufficient job status, perceiving that one's job fits one's long-range goals and that one has good future prospects for further advancement, having policy- and decision-making responsibility, and feeling one's skills are fully utilized on the job.

In some cases, such as feeling one's skills are fully utilized, a job attitude may affect or influence overall job satisfaction. In other cases, such as feeling one's job fits one's long-range goals, overall satisfaction may affect the job attitude. In still other cases, some other, as yet unconsidered, variable may influence both overall satisfaction and a job attitude. For example, one's income may affect both the feeling of sufficient job status and level of overall job satisfaction.

Not only might the various attitudes relate differently to general job satisfaction, but also these attitude-job satisfaction relationships may differ for each cohort. Indeed, the very satisfied older workers were more likely than the very satisfied younger workers to feel that they would like to remain with their current employer, their job fits their long-range goals, they have sufficient job status or prestige, they have policy- or decision-making responsibility, and they design their own work programs. On the other hand, the very satisfied younger workers were more likely to be satisfied with their career progress and to feel they are working at a professional level and their skills are fully utilized.

Through multiple regression analysis it can be determined which of the variables most closely relate to overall job satisfaction, as well as whether the relationship between job satisfaction and these variables is similar for the 1977 and 1974 cohorts. *Table* 55 shows the regression results for both cohorts. In stepwise multiple regression, which was used

TABLE 55

Summary of Influences on Job Satisfaction for Both Cohorts

Variables that Entered Regression Equation	1977 Cohort (N = 3,000)		1974 Cohort (N = 2,171)	
	Entering Beta*	Final Beta	Entering Beta*	Final Beta
Sex: female	−.050	.008		
Life Goal				
Become authority in field	.103	.026		
Write original works	−.104	−.053*		
Make theoretical contribution to science	−.059	−.060*	−.047	−.042*
Gain recognition from colleagues	.069	.024		
Be very well off financially	−.055	−.053*	−.044	−.042*
Raise a family	.049	.013	.079	.042*
Help others in difficulty	.039	.035*		
Be successful in own business	.037	.025	−.046	−.046*
Become a community leader	−.034	−.041*	.099	.045*
Be accomplished in creative arts			−.056	−.044*
College Experience				
College grades were high	.039	−.000		
College selectivity was high	.037	.027		
Work History				
Chose current occupation recently	−.089	−.002		
Number of full-time jobs since college was high	−.045	−.026	−.069	−.042*
Long time with employer	−.038	−.050*		
Aspects of Current Job				
Skills are fully utilized	.350	.251*	.292	.243*
Job is professional level	.259	.179*	.108	.118*
Salary is high	.131	.124*	.150	.087*

old policy-/decision-making responsibility	.098	.081*		
ob is related to major	.100	.086*		
et own work hours	.041	.037*		
esign own work program			.064	.064*
ork activity:				
Public relations	.053	.050*		
Clerical	−.057	−.052*	−.064	−.072*
Mathematical/Statistical	.046	.049*		
Writing	−.041	−.048*		
Health service	−.040	.002		
Sales			.086	.024
Data processing			−.042	−.049*
Personnel			.043	.032
Teaching			.049	.069*
ccupation:				
Semi-skilled	−.056	−.065*		
Health	−.065	−.069*		
Accounting	−.045	−.046*	−.046	−.060*
Clerical	−.040	−.040*	−.043	−.048*
Engineering			−.044	−.061*
Business owner			.056	.054*
ector:				
Business/industrial			.090	.146*
Government			.050	.050*
umber of skills for which college prepared but not used in current job			.041	.044*
R^2	.279*		.180*	

All entering betas and those final betas with an asterisk are significant at $p \leq .05$ level, i.e. the possibility of observing a relationship where fact there is none is five percent or less.

OTE: Discrepancies in the number of respondents included for various analyses are caused by the differences in number of nonrespondents r each variable used in the analyses. In these regression analyses, if a respondent neglected to answer any one of the questions used, e data for that respondent could not be included for any of the variables.

here, the variable with the greatest association (either positive or negative) with the dependent variable (in this case, job satisfaction) enters the regression equation first. Entering second is the variable most associated with the dependent variable after having controlled for the first variable. The last variable to enter would be the one least associated with the dependent variable yet still significantly related after having controlled for all other variables in the regression.

In the final analysis, one can rank the importance of each significant variable by looking at the absolute size of the corresponding standardized beta coefficient. Since they are standardized, the betas can be compared across cohorts to determine relative importance. The sign of the beta coefficient indicates the direction of the relationship with the dependent variable.

Only those variables which entered, and therefore were significant for at least one of the cohorts, are listed in *Table* 55. Other variables, such as additional occupational categories (only six are listed) were not significantly associated with job satisfaction and therefore are not included in the table. Blanks indicate that the listed variable was not significant for that cohort. Some variables lost significance by the final step because later variables, while adding to the explanation of job satisfaction, were also correlated with the earlier variables. Because of unavoidable intercorrelations among two or more of the independent variables which are also correlated with the dependent variable, and because the variable entering first gets credit for most of this joint correlation, the relationship between each successive variable and the dependent variable is less than it would be without controlling for all the other variables. Thus, it is more likely that a statistically significant relationship could be overlooked than that one could occur which would be spurious.

The four general categories of variables used to explain overall job satisfaction were: life goals, college experiences, previous work history, and aspects of the current job. The final combination of variables explains more of job satisfaction for the younger cohort than the older cohort, as indicated by the magnitude of the multiple correlation coefficients (R^2s). For the younger cohort, over 27 percent of the variance was explained; but for the older cohort, only 18 percent was explained. In both cases, however, the regression equations on job satisfaction are significant.

For both cohorts, the explanatory variable most highly correlated with job satisfaction was the perception that skills were fully utilized on the job. In an earlier study (Solmon, Bisconti, & Ochsner, 1977), it was found that skill utilization refers to more than merely the use of college-course content. In the 1977 regression, the perception that one's job

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was closely related to one's major was also highly significant, having the fourth largest beta coefficient. However, the relationship between job and major was not significantly associated with job satisfaction for the older group. This confirmed the finding that relatedness tends to become less important by the time a worker has been out of college for nine years.

The second most important determinant of job satisfaction for the older cohort was employment in the business sector (rather than in the government, nonprofit, or school sector). Employment sector was not an important factor for the younger cohort. One reason for the importance of working in business for the older cohort could be that salaries are higher there than in other sectors. However, the regression showed that having a high salary had an independent, positive effect on job satisfaction for both groups. Therefore, for older workers, working in the business sector was satisfying for reasons *in addition* to the high salaries obtainable there. Working in the government sector also was satisfying for the older group, although not to as high a degree.

For both cohorts, the perception that one's job is at a professional level was significantly associated with greater job satisfaction, although it is unclear whether the perception that one's job is professional enhanced job satisfaction or whether job satisfaction influenced the perception that one's job is professional.

Having policy- or decision-making responsibility was important in explaining differences in levels of job satisfaction for the younger cohort, but not for the older cohort. Since relatively fewer younger workers probably have such responsibility, having it becomes an important job trait. For the older cohort, decision-making responsibility may be almost synonymous with professional level, but for the younger cohort, professional level may not necessarily include policy- or decision-making responsibility.

Several life goals contributed negatively to explaining overall job satisfaction. For respondents in both cohorts, the more important it was to make theoretical contributions to science and to be very well off financially, the less likely they were to be very satisfied. Perhaps this is because in so few years, especially for the younger respondents, they have not been able to fulfill these life goals.

Also negatively affecting job satisfaction, for the older cohort, were the goals to be successful in their own business and to be accomplished in the creative arts. But the more important it was to them to raise a family and to become community leaders, the more likely they were to be very satisfied with their jobs. These latter are strictly nonjob-related

goals, but add credence to the view that life and job satisfaction are positively associated, not compensatory.

For the younger cohort, other life goals negatively associated with job satisfaction were to write original works and to become a community leader, neither of which probably have had enough time to come to fruition. The only life goal significantly and positively related for this group was to help others in difficulty.

Having controlled for all other personal, college experience, work history, and current job variables, there were no sex differences in explaining levels of job satisfaction. If there had been no control for income differences in the younger cohort, women would have revealed significantly lower levels of satisfaction than men. That is, most of the lower job satisfaction for women was due to their lower salaries. By the time they were nine years out in the labor force, even though they still earned, on average, less than men, women tended to be at least as satisfied with their jobs as men.

Often the variables which do not emerge as important in explaining job satisfaction are just as essential for understanding as those which do emerge. For instance, neither of the college experience variables was significant in the final analysis for either cohort. However, both college grade point average and college selectivity entered as significant for the younger graduates but lost significance once other job variables were controlled. This implies that quality of undergraduate institution and grades may be important for securing a good entry-level job but, later in the career, job experience variables become more important.

Whether the graduate chose his/her career before entering college, during college, or much later also does not affect subsequent job satisfaction for either cohort after having controlled for personal, college experience, and job aspect variables. However, just as for the college experience variables, when the younger workers chose their careers was significantly related to their job satisfaction until other job aspect variables were accounted for. Without considering such things as salary level, use of skills, feeling of professionalism, relation of job to major, work activities, type of occupation and employment sector, the earlier the younger graduates selected their careers, the more satisfied they were with their jobs. This is not true for the older workers, probably because career goals in college tend to be short-range, and it is not until one is out in the labor market for five to ten years that one's career and career goals achieve stability (Mincer, 1970).

Job turnover for both cohorts was significantly related to job satisfaction, but the direction of influence cannot be determined. The more

full-time jobs the graduates have had since college, the less satisfied they were with their current employment. This variable did not remain significant for the younger workers, who probably had not experienced much job mobility yet.

Type of work activity and occupation affected job satisfaction for both cohorts. Accountants, clerical workers, and/or those who perform clerical-type activities tended to be dissatisfied with their jobs, regardless of cohort. The older graduates who were engineers or performed data processing activities and the younger graduates who were health workers, semi-skilled workers, or did writing, were also less satisfied than others. Younger graduates tended to be more satisfied if they performed public relations, mathematical, or statistical activities.

Finally, for the older cohort only, the greater the number of college-prepared skills *not* used on the job, the higher the job satisfaction. Unless workers are promoted out of college-related jobs, it seems, they will remain or become less satisfied. As emphasized before, in the early years of employment, jobs highly related to one's college educational training are desirable, whereas, later on, less related jobs, such as those in management, are preferred.

The Meaning of Satisfaction

So far, the characteristics of workers and the jobs which make college graduates satisfied with their work have been examined. The next step is to discern what is meant by "overall job satisfaction." To do this, a regression was run to investigate the younger workers' overall job satisfaction in terms of their satisfaction with various aspects of the job. The designs of the two follow-up questionnaires enabled this analysis to be conducted only for the 1977 cohort.

Clearly, satisfaction with challenge contributed the most to explaining overall job satisfaction (*Table 5t*). Challenge also has been found to be the most important determinant of job satisfaction for Ph.D.'s (Solmon, Ochsner, & Hurwicz, forthcoming; Solmon & Hurwicz, 1978).

Next most important were satisfaction with status of position and with income. The more satisfied the graduates were with their status and income, the more satisfied they were with their job generally.

Also important were their satisfaction with the opportunities for advancement with their current employer, the variety of activities they perform, congenial work relationships, and their working conditions, such as hours and location.

Of less importance, but still significant contributors, were satisfaction

TABLE 56

Predicting Job Satisfaction, by Satisfaction with Aspects of Job

Variable	1977 Cohort (N = 3,356) Final Beta*
Satisfaction with:	
Challenge	.202
Status of position	.148
Income	.147
Opportunities for advancement with current employer	.125
Variety in activities	.089
Congenial work relationships	.080
Working conditions (hours, location)	.077
Opportunity to contribute to society	.072
Opportunity to use training or schooling	.061
Opportunity for creativity	.058
Extent of responsibility	.054
Job security	.032
Prestige of employing organization	.031
Autonomy, independence	.029
$R^2 = .585$*	

* Significant at $p \leq .05$ level, i.e. the possibility of observing a relationship where in fact there is none is five percent or less.
NOTE: Discrepancies in the number of respondents included for various analyses are caused by the differences in number of respondents for each variable used in the analyses. In these regression analyses, if a respondent neglected to answer any one of the questions used, the data for that respondent could not be included for any of the variables.

with the opportunity to contribute to society, to use training or schooling, to be creative in their work, and to have responsibility. For some respondents, the desire to be creative may be highly associated with the desire for challenge in their job.

Quite far down the list in importance were job security and autonomy or independence, aspects of the job which many of these younger workers probably have not yet attained to any degree. Moreover, the prestige of the employing organization was much less important to these recent college graduates than their personal job status.

If employers wish to determine whether or not future college graduates will be satisfied in their work, they need not be concerned so much with the match between major and job, but rather whether jobs can be designed to provide more challenge, personal status or prestige, and relatively more income.

Summary and Conclusions

COLLEGE GRADUATES were much more likely to change occupational choice than major field after their freshman year. Fewer than one-third of either the 1974 or 1977 cohorts entered the occupation they had expected to as freshmen. The longer they were in the work force, the less likely they were to be working in the occupation they had originally anticipated. However, the match between anticipated and actual occupation varied by occupation. If, as freshmen, they expected to become teachers, they were more likely than others to be in their anticipated profession at the time of the two follow-up surveys. Of course teachers generally remain teachers, whereas individuals in many other occupations may be promoted to supervisory or "management" positions which are considered different occupations.

Although the data are not available for the older cohort, for the younger cohort, important reasons for attending college were to get a better job, to learn more about things that interested them, to gain a general education and appreciation of ideas, and to improve their academic abilities. It is important to note that bettering their job prospects was at least as much a motivation as furthering their general intellectual development.

Contrary to previous findings, particularly those that consider freshman to senior changes (Astin, 1976), the 1977 respondents placed greater importance on business interests and status needs and less importance on social and political concerns seven years after college matriculation than they did as freshmen. Over 80 percent of these young graduates said that having a steady job was very important or essential to them and over half rated highly the goal of using their college training in their job. Changes in attitudes and values may be more a function of overall societal value changes than of college environmental influences. Or college may influence attitude development, but the impact of college may not endure long after graduation.

The 1974 follow-up study of 1961 freshmen revealed that most graduates viewed their college education as useful in both job and nonjob-related ways. For the most part, the more recent graduates, despite poor labor market conditions, were at least as confident if not more so about the usefulness of their college education. Recent graduates were more likely than the earlier graduates to frequently use the content of their major courses in their work. Of course, entry-level jobs may require the use of specific college studies to a greater extent than higher-level jobs do, and the recent graduates were more likely than the earlier graduates to hold entry-level positions. Many other skills are acquired after college graduation to supplement or replace college-learned skills.

College prepares graduates mostly for their first job after graduation rather than for later jobs, although the usefulness of college training varies by major field and occupation. In both cohorts, vocationally oriented majors were more likely than liberal and scientifically oriented majors to say they frequently use their education in their work. The more career-specific majors—education, business, and engineering—were used more frequently than others. The only majors used more often after nine years in the labor market than after two or three were business, English, and economics.

Occupations which allowed frequent use of major field were education, health service work, accounting, mathematical and scientific work, and engineering. Low-use occupations were business proprietorship, administration, office work, and, not surprisingly, skilled and semi-skilled work.

Men in both cohorts who majored in business or engineering were more likely to recommend their major as preparation for their job than men who majored in any other field. Of the women, those in the 1974 cohort who majored in a natural science or education and those in the 1977 cohort who majored in business or education were more likely than the others to recommend their major.

Business skills were viewed as most useful by nonmajors after nine years, followed by psychology, sociology, and English. Apparently, once promoted into management positions, college graduates view business, interpersonal, and communications skills as essential or very important for their jobs.

In the recent cohort, both men and women nonmajors tended to recommend the social sciences (other than economics) and English as preparation for their jobs. Since these fields were more likely to be suggested by those who did not major in them than by majors themselves, perhaps the curricula do not offer as much work-related training as would be ex-

pected. Those who were not as exposed to these subjects as the majors may believe that their interpersonal skills and their communications abilities would have benefited from more contact in these fields. If courses in English and the social sciences offered the training anticipated by those who have not majored in them, the learning experience might become significantly more suitable as preparation for work.

Even though the recent graduates used their college training in their jobs more than the earlier graduates, the recent graduates said that, by far, the most common way of obtaining their job skills was on-the-job experience. College study was a less important method, although more important than either formal job training or college work experience.

It is inappropriate to compare satisfaction of older and younger workers at one point in time and to conclude that dissatisfaction is growing because the younger workers are less satisfied. Evidence shows that younger workers are always more dissatisfied with their job than older, more experienced workers (USDL, 1974). This is true despite the greater utilization of education by the younger students. Indeed, only four percent of the 1974 cohort expressed dissatisfaction, but 14 percent of the 1977 cohort said they were not satisfied. Even so, 14 percent is far from the 80 percent speculated by O'Toole and others to be underemployed and greatly dissatisfied. It must be noted, however, that this study involved only full-time workers whereas O'Toole and others probably considered part-time workers as well.

Level of job satisfaction differed considerably by occupation. For both cohorts, business owners expressed the greatest satisfaction; office workers, skilled, semi- and unskilled workers the least. Education and sales were also satisfying occupations for both cohorts, along with mathematical and scientific work and engineering for the younger cohort and administration and health service work for the older cohort.

Job satisfaction was not dependent on relatedness of job to major for the 1974 cohort. Older workers who still held closely related jobs (except business and English majors) tended to be less satisfied than others in their cohort even though they used their training more. Apparently those who are most satisfied with their work after a longer period have advanced from the jobs that enabled them to use the specific content of their college courses.

The more recent graduates, particularly those from fields that provide specific knowledge for entry-level jobs, were more likely than older graduates to hold jobs related to their major field, however they were not necessarily more satisfied. Further, degree of relatedness varied greatly by occupation. The extent of the job's relationship to major, then, is not

necessarily the prime determinant of job satisfaction. Nontraditional occupational choices for college graduates can be just as satisfying as the traditional choices.

Although, for entry-level workers, use of college education is clearly an important factor for job satisfaction, the reason for lack of relatedness (whether voluntary or involuntary) is even more important. The reasons given for holding unrelated jobs differed by cohort. The older workers tended to be pulled out of related jobs by better opportunities, while the younger workers tended to be pushed into unrelated jobs because of lack of opportunities.

Much has been written recently about *under*employed college graduates and overeducated Americans. The earlier study disputed these indictments of contemporary higher education in the United States. However, since the respondents to the 1974 follow-up survey graduated in a period of greater demand and smaller supply in the 1960's, there was some question about generalizing the findings to more recent graduates.

Indeed, comparing the 1970–1977 cohort responses to those of the 1961–1974 cohort confirms that the job market for college graduates was tighter in the mid-1970's than it was in the mid-1960's. This could be expected, considering the slower growth of the economy and the huge increases in college enrollments during the 1970's. Nevertheless, college graduates are less likely than non-college graduates to be unemployed. Further, more than half of the younger graduates in this study said they were not underemployed and over four-fifths were very or at least somewhat satisfied with their job.

If they were dissatisfied with their job, however, they were much more likely to say they were underemployed. Over three-fourths of those not satisfied said they were underemployed and preferred a more challenging position. The job satisfaction-underemployment relationship can be viewed in at least two ways: either a worker feels underemployed and therefore is dissatisfied, or a worker is dissatisfied and therefore feels underemployed.

Relatedness of job to major was not as highly associated with underemployment as job satisfaction was, but the correlation between relatedness and underemployment was still significant. Of the younger workers in unrelated jobs, half said they were underemployed and wanted a more challenging position. This perception of underemployment probably resulted less from the unrelatedness of the job than from the fact that this unrelatedness was not voluntary.

For both cohorts, the feeling that their skills (not only college-trained skills) are fully used in the job was the most important variable in ex-

plaining differences in job satisfaction levels. Also important for both cohorts were their salary level and the perception that their jobs were at a professional level. Relatedness was important for the younger workers, but not for the older workers; and employment setting was important for the older but not the younger graduates. Not very important were college grades and institutional quality, especially the longer the graduates were out in the labor force.

Above all, a satisfying job is a challenging job. Other aspects of the job which increase satisfaction are: higher job status and income, the opportunity for advancement, having a variety of work activities, satisfaction with working conditions, and congenial work relationships.

Clearly college graduates are more likely than others to obtain jobs with these characteristics. Having the credential—the diploma—is useful in convincing employers that the job applicant should be given the opportunity to work and to progress into good jobs. College graduates usually do succeed in obtaining satisfying jobs, both early in their careers and later on, and since college does affect students' knowledge and attitudes, it is likely that college has contributed to their success.

This conclusion has been widely stated by others. Perhaps the best summary of the value of a college education comes from Howard Bowen in *Investment in Learning:* "First, the monetary returns from higher education alone are probably sufficient to offset all the costs. Second, the nonmonetary returns are several times as valuable as the monetary returns. And third, the total returns from higher education in all its aspects exceed the cost by several times. In short, the cumulative evidence leaves no doubt that American higher education is well worth what it costs."

References and Appendix

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Appendix

TABLE A-1

College Major, by Occupation: 1977 Cohort

(In percentages)

Occupation	College Major									
	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering	Other
Accountant	*	2	6	1	*	6	31	*	*	*
Office worker	21	15	12	16	4	7	12	8	*	8
Administrator	14	13	37	15	7	7	26	4	4	6
Business owner	*	1	5	1	1	1	2	*	*	2
Salesperson	6	6	12	6	2	2	15	2	*	4
Mathematician/scientist	*	1	11	3	21	36	3	*	2	4
Health service worker	3	1	*	4	27	*	*	1	*	40
Engineer	*	*	*	*	5	4	1	*	80	3
Educator	34	24	1	13	11	24	2	77	1	12
Social worker/counselor	3	3	2	21	1	1	1	2	*	1
Artist	9	17	*	2	*	*	*	1	1	2
Skilled worker	4	6	1	7	6	2	2	1	1	3
Semi-/unskilled worker	3	7	4	4	5	2	2	2	1	2
Other	3	5	8	6	9	5	4	2	8	13

* Less than 0.5%.

TABLE A-2

College Major, by Occupation: 1974 Cohort

(In percentages)

Occupation	College Major									
	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering	Other
Accountant	2	*	9	1	1	2	20	*	*	1
Office worker	8	11	7	11	3	2	8	2	1	2
Administrator	12	12	23	19	11	10	26	4	11	8
Business owner	2	4	10	3	4	1	9	2	2	2
Salesperson	5	9	16	14	6	5	12	4	5	8
Mathematician/scientist	1	3	5	5	17	32	3	*	6	1
Health service worker	1	1	*	1	16	*	*	1	*	11
Engineer	2	1	*	1	6	7	1	1	62	2
Educator	29	27	4	14	11	26	5	74	1	23
Social worker/counselor	3	3	1	7	*	*	*	2	*	1
Artist	12	5	2	2	*	*	1	*	1	9
Skilled worker	1	1	1	1	1	*	1	*	1	*
Semi-/unskilled worker	1	2	1	1	*	*	*	*	*	1
Other	18	22	21	22	24	13	15	11	10	30

* Less than 0.5%.

TABLE A-3

Anticipated Major, by Actual Major: 1977 Cohort

(In percentages)

Actual Major	Anticipated Major									
	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering	Other
English	40	10	0	6	2	1	2	6	*	1
Arts & humanities (other)	15	55	17	15	8	8	6	12	4	8
Economics	0	1	11	1	2	4	5	1	3	0
Social sciences (other)	10	11	17	48	11	8	8	9	3	6
Natural sciences	4	4	11	5	54	5	3	2	5	11
Mathematics	1	*	0	1	4	45	3	2	8	1
Business	3	5	17	4	3	12	64	3	13	6
Education	15	8	11	9	3	9	4	57	2	7
Engineering	0	*	6	*	2	1	1	0	53	1
Other	12	6	11	10	9	6	3	7	7	57

* Less than 0.5%.

Note: No one in the 1977 cohort said they were undecided about anticipated major.

TABLE A-4

Anticipated Major, by Actual Major: 1974 Cohort

(In percentages)

Actual Major	Anticipated Major										
	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering	Other	Undecided
English	43	11	15	8	5	4	4	6	1	6	10
Arts and humanities (other)	23	44	12	18	8	8	5	13	3	10	15
Economics	1	4	41	8	5	7	9	2	5	6	8
Social sciences (other)	14	16	21	40	15	8	6	9	4	11	24
Natural sciences	3	3	0	3	37	4	*	5	6	19	10
Mathematics	2	1	0	*	8	41	1	2	8	2	6
Business	6	6	6	10	11	14	71	12	15	12	18
Education	4	4	3	5	2	6	2	39	2	8	4
Engineering	1	1	0	3	4	3	*	2	51	4	1
Other	3	7	3	4	4	3	2	9	5	21	5

* Less than 0.5%.

TABLE A-5

Anticipated Occupation, by Actual Occupation: 1977 Cohort

(In percentages)

Actual Occupation	Anticipated Occupation														
	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/ Scientist	Health Service Worker	Engineer	Educator	Social Worker/ Counselor	Artist	Skilled Worker	Other	Undecided
Accountant	44	9	8	7	5	7	1	5	3	1	0	0	4	4
Office worker	7	38	12	7	0	7	6	1	10	12	13	0	11	16
Administrator	16	16	30	34	50	10	7	10	6	13	16	10	10	13
Business owner	0	0	2	10	0	1	2	1	1	0	2	0	2	1
Salesperson	9	3	16	10	20	5	3	5	2	4	5	14	6	6
Mathematician/ scientist	4	9	3	9	5	28	6	6	4	3	2	0	7	8
Health service worker	2	0	2	0	0	11	50	1	4	12	2	14	8	9
Engineer	1	0	1	0	0	5	1	52	0	0	0	14	5	3
Educator	6	22	4	0	15	8	12	3	56	19	17	10	9	14
Social worker/ counselor	3	3	4	5	0	2	3	0	3	23	4	5	4	7
Artist	1	0	1	5	0	2	2	2	2	1	29	5	3	4
Skilled worker	2	0	4	15	0	4	2	1	2	4	4	14	3	5
Semi-/unskilled worker	2	0	5	0	5	3	1	2	2	4	5	10	4	5
Other	5	0	5	7	0	6	2	9	2	5	1	5	24	4

Note: No one in the 1977 cohort said they planned to be a semi- or unskilled worker.

TABLE A-6

Anticipated Occupation, by Actual Occupation: 1974 Cohort

(In percentages)

Actual Occupation	Anticipated Occupation													
	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/ Scientist	Health Service Worker	Engineer	Educator	Social Worker/ Counselor	Artist	Skilled Worker	Other	Undecided
Accountant	30	4	4	12	4	3	3	5	2	3	1	*	4	4
Office worker	7	17	6	4	4	5	4	4	5	6	9	*	8	8
Administrator	19	13	35	24	19	12	13	12	11	11	8	*	15	16
Business owner	6	0	9	13	17	3	4	3	2	5	1	*	5	4
Salesperson	9	9	19	16	23	5	9	7	5	10	3	*	11	9
Mathematician/ scientist	2	9	5	0	0	26	7	9	4	3	3	*	4	11
Health service worker	0	0	0	1	2	2	18	0	1	4	3	*	1	1
Engineer	1	4	2	4	2	8	3	35	1	1	0	*	4	3
Educator	7	22	5	8	13	9	12	5	46	22	13	*	14	11
Social worker/ counselor	1	0	0	0	2	0	2	0	3	9	3	*	2	2
Artist	0	0	0	1	2	1	3	2	2	3	32	*	2	6
Skilled worker	1	0	1	1	0	0	0	1	0	1	1	*	0	0
Semi-/unskilled worker	0	0	0	0	2	1	1	0	1	2	1	*	0	1
Other	16	22	12	14	9	22	18	14	15	18	18	*	26	21

* Fewer than 10 observations.

Note: No one in the 1974 cohort said they planned to be a semi- or unskilled worker.

TABLE A-7

Life Goals of Both Cohorts, by Sex

(In percentages)

Essential or Very Important Life Goals	1977 Cohort				1974 Cohort[1]	
	Men		Women		Men	Women
	In 1976	In 1977	In 1976	In 1977	In 1971	In 1971
Business Interests	42	53	21	45	48	28
Be very well off financially	44	54	26	41	38	12
Be successful in own business	18	18	5	6	•	•
Become expert in finance and commerce						
Status Needs	65	61	55	50	52	36
Become an authority in my field	38	50	28	45	45	31
Obtain recognition from colleagues	13	12	9	9	17	10
Become a community leader	15	9	5	5	4	5
Make a theoretical contribution to science	20	44	10	28	•	•
Have administrative responsibility for the work of others						
Social Values	52	46	69	56	49	66
Help others in difficulty	18	11	12	7	•	•
Influence the political structure	28	27	30	28	•	•
Influence social values	12	3	22	4	•	•
Participate in an organization like Peace Corps or Vista	55	36	54	30	•	•
Participate in a community action program						
Artistic Interests	8	8	14	11	10	20
Become accomplished in a performing art	9	11	14	12	5	9
Write original works	10	16	21	33	•	•
Create artistic work						
Family Concerns	60	45	76	49	77	60
Raise a family	18	34	33	39	•	•
Get married within the next five years	•	70	•	45	•	•
Continue career while raising a family	•	6	•	44	•	•
Interrupt career while children are young (under six)						
Job Aspects	•	86	•	83	•	•
Have a steady job	•	54	•	63	•	•
Have a job using my college training						
Personal Concerns	21	27	17	26	•	•
Never be obligated to people	70	73	81	76	•	•
Develop a meaningful philosophy of life	54	56	54	55	•	•
Have an active social life	54	44	69	44	•	•
Have friends with backgrounds and interests different from mine						

[1] The 1974 cohort (1961 freshmen) were asked about life goals only in the 1971 follow-up.
• Not all items were asked in each of the three surveys.

TABLE A-8

Usefulness of College Education, by Orientation of Major

(Percentages reporting "very useful")

Dimension	Orientation of Major[1]					
	1977 Cohort			1974 Cohort		
	Liberal	Scientific	Vocational	Liberal	Scientific	Vocational
Increased general knowledge	76	71	63	78	73	68
Increased ability to think clearly	58	55	48	44	48	42
Increased leadership ability	36	29	36	32	20	22
Taught skill that enabled me to get first job	30	51	60	28	42	52
Increased chances of finding a good job	43	66	75	58	70	77
Helped choose life goals	33	33	37	18	20	24
Gave knowledge and skills used in current job	39	52	64	27	36	46
Bachelor's degree was factor in being hired by current employer	50	67	74	52	61	64
Bachelor's degree was necessary for promotion	32	44	41	29	35	40
Contacts made in college with professors or friends helped get current job	14	14	14	5	5	4

[1] Liberal includes English, other arts and humanities, and other social sciences; scientific includes economics, natural sciences, and mathematics; vocational includes business, education, and engineering.

TABLE A-9

Majors Using Major Course Content Almost Always or Frequently, by Occupation: 1977 Cohort

(In percentages)

Major	Occupation													
	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/Scientist	Health Service Worker	Engineer	Educator	Social Worker/Counselor	Artist	Skilled Worker	Semi-/Unskilled Worker
English	*	10	26	*	0	*	*	*	78	*	33	*	*
Arts & humanities (other)	10	3	15	*	16	*	*	*	84	18	72	37	0
Economics	*	30	55	*	30	*	*	*	*	*	*	*	*
Social sciences (other)	*	10	22	*	23	28	47	*	56	63	36	21	20
Natural sciences	*	5	18	*	10	85	76	59	86	*	*	31	14
Mathematics	55	4	32	*	*	60	*	31	72	*	*	*	*
Business	91	60	57	*	45	70	*	*	100	*	*	*	*
Education	*	5	19	*	*	*	*	*	82	27	*	*	*
Engineering	*	*	*	*	*	*	*	66	*	*	*	*	*

* Fewer than 10 observations.

TABLE A-10

Majors Using Major Course Content Almost Always or Frequently, by Occupation: 1974 Cohort

(In percentages)

Major	Occupation												
	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/ Scientist	Health Service Worker	Engineer	Educator	Social Worker/ Counselor	Artist	Skilled Worker	Semi-/ Unskilled Worker
English	*	21	51	*	19	*	*	*	74	30	36	*	*
Arts & humanities (other)	*	9	6	20	4	0	*	*	63	14	39	*	*
Economics	52	41	31	35	39	17	*	*	*	*	*	*	*
Social sciences (other)	*	11	27	8	26	4	*	*	51	48	27	*	*
Natural sciences	*	8	31	29	24	58	86	52	73	*	*	*	*
Mathematics	*	*	16	*	33	19	*	41	75	*	*	*	*
Business	84	52	57	65	38	9	*	*	67	*	*	*	*
Education	*	*	33	*	9	*	*	*	75	*	*	*	*
Engineering	*	*	30	*	19	15	*	64	*	*	*	*	*

* Fewer than 10 observations.

TABLE A-11

Preparation by College Education for Work Activities Currently Performed, by Activity and Major: 1977 Cohort

(In percentages)[1]

Activity	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering
Accounting	12	14	74	12	4	44	93	21	40
Administration, management	30	19	58	27	19	30	89	25	55
Clerical	14	7	22	10	8	16	47	12	7
Counseling	28	35	*	67	42	24	35	40	19
Data processing, computer science	*	11	27	18	50	79	66	*	85
Engineering	*	*	*	*	42	48	20	*	97
Farming, forestry	*	*	*	*	29	*	*	*	*
Health service	30	12	*	27	81	*	*	45	*
Mathematical, statistical, actuarial	36	29	81	43	72	94	83	58	98
Performing, creative arts	43	93	*	43	*	*	*	52	*
Personnel, employee relations	25	14	20	39	8	24	64	28	34
Production, quality control	7	14	*	26	0	26	39	8	28
Program planning, budgeting	20	17	45	18	15	31	56	46	34
Public relations, advertising	31	35	*	18	6	21	68	42	31
Publications	69	49	*	21	16	*	30	*	*
Public safety, community service	*	10	*	62	30	*	21	28	*
Research (laboratory)	*	*	*	*	93	*	*	*	60
Research (other)	72	60	*	69	64	75	31	73	54
Sales, marketing	4	6	33	9	3	25	72	0	*
Speaking, discussion leading	58	57	54	47	38	45	48	50	48
Teaching	86	88	*	71	60	82	41	98	23
Technology, design, construction	*	46	*	9	43	21	10	*	62
Training	13	19	0	19	18	20	19	33	19
Writing, editing	81	75	57	55	44	62	50	60	56

[1] Percent of those performing activity who learned to perform this activity in college.
* Fewer than 10 observations.

TABLE A-12

Preparation by College Education for Work Activities Currently Performed, by Activity and Major: 1974 Cohort

(In percentages)[1]

Activity	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering
Accounting	17	23	79	24	38	29	91	15	27
Administration, management	17	20	66	29	23	15	79	22	19
Clerical	16	13	39	20	23	18	56	18	18
Counseling	22	24	28	47	21	22	22	31	6
Data processing, computer science	9	8	27	14	18	34	23	*	49
Engineering	*	23	*	4	35	40	25	27	97
Farming, forestry	*	*	*	*	56	*	8	*	*
Health service	25	24	*	24	77	*	15	41	*
Mathematical, statistical, actuarial	35	26	63	43	72	90	73	33	86
Performing, creative arts	46	72	82	53	73	48	41	50	68
Personnel, employee relations	18	19	35	45	12	13	45	15	14
Production, quality control	8	7	11	10	31	18	32	9	20
Program planning, budgeting	10	10	26	9	11	11	44	31	11
Public relations, advertising	22	19	17	22	4	6	37	13	4
Publications	47	22	12	26	25	8	30	25	22
Public safety, community service	6	13	30	32	17	*	5	23	18
Research (laboratory)	*	*	*	*	86	70	*	*	61
Research (other)	55	59	35	42	62	37	31	36	58
Sales, marketing	5	7	37	23	12	16	62	4	4
Speaking, discussion leading	57	49	59	52	38	35	47	52	35
Teaching	82	81	30	55	55	64	34	95	21
Technology, design, construction	33	43	33	20	46	38	20	44	67
Training	13	18	12	19	12	12	10	24	7
Writing, editing	88	84	64	57	59	55	45	62	46

[1] Percent of those performing activity who learned to perform this activity in college.
* Fewer than 10 observations.

TABLE A-13

Method of Acquiring Job Skills, by Occupation: 1974 Cohort

(In percentages)

Occupation	Method Job Skills Acquired				
	Other Formal Training	In-House Training	On-the-Job Training	Picked It Up Myself	No Training Required
All respondents	19	38	84	60	2
Accountant	19	42	93	46	0
Office worker	18	31	84	59	4
Administrator	21	50	89	61	1
Business owner	14	24	80	76	0
Salesperson	14	65	90	57	0
Mathematician/scientist	28	60	90	53	1
Health service worker	30	26	82	34	2
Engineer	13	45	88	61	2
Educator	20	10	72	66	4
Social worker/counselor	10	47	82	66	5
Artist	7	18	82	79	1
Skilled worker	4	9	87	61	0
Semi-/unskilled worker	0	9	70	39	44

TABLE A-14

Job Attitudes, by Occupation: 1977 Cohort

(In percentages)

Attitude	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/ Scientist	Health Service Worker	Engineer	Educator	Social Worker/ Counselor	Artist	Skilled Worker	Semi-/ Unskilled Worker
Satisfied with career progress to date	58	25	64	76	58	74	65	67	71	58	61	37	10
Job fits long-range goals	40	13	42	71	46	50	37	45	49	37	51	26	10
Job offers good future prospects for further advancement	62	35	69	83	67	58	37	68	22	34	61	41	20
Would like to remain with current employer for foreseeable future	50	32	60	24	51	55	43	64	53	45	38	34	19
Satisfied with quality of interaction with supervisor	58	49	60	27	62	64	53	60	55	71	50	58	30

TABLE A-15

Job Attitudes, by Occupation: 1974 Cohort

(In percentages)

Attitude	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/ Scientist	Health Service Worker	Engineer	Educator	Social Worker/ Counselor	Artist	Skilled Worker	Semi-/ Unskilled Worker
Satisfied with career progress to date	65	44	80	87	59	58	66	80	64	54	64	42	29
Job fits long-range goals	57	31	67	62	58	45	47	54	52	40	52	37	29
Job offers good future prospects for further advancement	68	52	73	47	68	59	35	61	19	16	48	16	16
Would like to remain with current employer for foreseeable future	77	62	77	49	80	68	59	71	66	55	55	37	41
Satisfied with quality of interaction with supervisor	63	65	66	13	66	63	53	62	61	55	55	42	53

TABLE A-16

Job Characteristics, by Occupation: 1977 Cohort

(In percentages)

Characteristics	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/Scientist	Health Service Worker	Engineer	Educator	Social Worker/Counselor	Artist	Skilled Worker	Semi-/Unskilled Worker
Am working at a professional level	74	15	64	56	47	77	84	70	87	68	75	32	3
Have policy- and decision-making responsibility	40	24	74	93	49	34	44	44	44	56	52	38	18
Have sufficient status or prestige	42	22	64	76	48	55	49	51	52	51	56	32	14
Set own work hours	15	4	21	88	43	31	9	10	4	14	30	12	4
Design own work program	40	24	53	83	62	46	27	43	47	52	59	29	14
Skills fully utilized	29	8	20	29	16	32	37	20	54	30	38	20	3
Am well paid for work compared with:													
• persons at same job level in same place of employment	40	32	43	29	37	42	35	38	31	27	35	26	26
• persons at same job level in other work settings	38	32	34	27	40	37	41	36	27	31	30	35	36
• persons in general with same amount of education	50	12	38	39	42	49	39	52	18	27	28	25	13

TABLE A-17

Job Characteristics, by Occupation: 1974 Cohort

(In percentages)

Characteristics	Accountant	Office Worker	Administrator	Business Owner	Salesperson	Mathematician/Scientist	Health Service Worker	Engineer	Educator	Social Worker/Counselor	Artist	Skilled Worker	Semi-/Unskilled Worker
Am working at a professional level	77	38	71	40	62	74	92	77	81	87	84	0	0
Have policy- and decision-making responsibility	62	44	91	95	58	38	65	52	44	53	66	26	12
Have sufficient status or prestige	70	44	82	77	66	61	69	64	61	64	70	47	29
Set own work hours	30	16	40	77	66	28	23	17	5	16	36	21	6
Design own work program	60	42	70	78	79	60	39	58	56	66	67	26	0
Skills fully utilized	40	15	37	37	21	26	46	30	43	26	37	5	0
Am well paid for work compared with:													
• persons at same job level in same place of employment	54	34	48	23	52	47	46	38	30	26	50	42	24
• persons at same job level in other work settings	50	36	53	37	49	47	47	40	18	29	48	32	41
• persons in general with same amount of education	53	25	65	48	52	51	46	56	13	22	36	26	12

TABLE A-18

Reason Job Is Not Closely Related to Major, by Major: 1977 Cohort

(In percentages)[1]

Reason	English	Arts & Humanities	Economics	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering
Voluntary									
First job was unrelated and I became interested in this type of work	22	23	25	24	23	30	23	17	17
Found job offering better chance for career advancement	20	24	23	21	20	23	24	13	17
Prefer line of work not closely related	13	11	11	9	9	13	10	12	22
Never planned to take a closely related job	26	18	20	17	6	14	5	8	17
Found better paying job	14	17	12	13	18	13	15	15	7
Tried closely related employment but did not like	9	7	2	8	8	11	8	11	12
Joined family business	4	5	7	5	4	5	10	2	2
No longer in closely related job due to promotion	2	2	0	2	4	3	1	2	7
Involuntary									
Employment opportunities are scarce for people in jobs related to my major	52	62	39	58	55	37	23	58	17
Very few jobs are related to my major	*	*	*	*	*	*	*	*	*
Jobs related to major are not available where I live and I do not want to move	13	19	18	15	18	18	18	26	9
Limited in job selection by situation of spouse, family responsibilities	9	9	4	7	11	8	9	12	2
Could not get a closely related job, but would prefer one	33	36	27	38	42	24	38	43	21
Am in the military	2	1	7	2	6	8	8	1	21
Wanted part-time work, flexible hours	3	3	2	2	3	1	1	1	2
Wanted to work at home	2	3	2	1	2	3	3	2	0
Am on a temporary assignment	2	1	0	2	0	2	0	0	3

[1] Percentage of those in only somewhat or not related job giving reason.
* Item not on 1977 questionnaire.

TABLE A-19

Reason Job Is Not Closely Related to Major, by Major: 1974 Cohort

(In percentages)[1]

Reason	English	Arts & Humanities	Biosciences	Social Sciences	Natural Sciences	Mathematics	Business	Education	Engineering
Voluntary									
First job was unrelated and I became interested in this type of work	30	32	34	34	28	36	27	16	16
Found job offering better chance for career advancement	27	29	30	28	35	33	34	49	33
Prefer line of work not closely related	27	24	22	22	26	35	25	24	24
Never planned to take a closely related job	29	28	37	25	12	20	11	5	16
Found better paying job	18	20	17	21	26	15	24	49	13
Tried closely related employment but did not like	18	17	8	13	20	12	25	30	18
Joined family business	6	6	12	7	7	6	16	8	10
No longer in closely related job due to promotion	4	1	2	3	13	6	7	1	22
Involuntary									
Employment opportunities are scarce for people in jobs related to my major	31	37	16	27	24	15	4	19	5
Very few jobs are related to my major	35	37	12	27	12	19	2	4	3
Jobs related to major are not available where I live and I do not want to move	14	16	10	9	11	9	8	18	10
Limited in job selection by situation of spouse, family responsibilities	10	6	6	9	7	4	7	14	4
Could not get a closely related job, but would prefer one	12	9	8	8	11	3	8	5	4
Am in the military	4	5	4	5	8	5	6	5	7
Wanted part-time work, flexible hours	4	4	1	3	2	1	0	1	1
Wanted to work at home	4	3	7	3	3	2	3	2	6
Am on a temporary assignment	1	1	0	0	0	0	1	1	1

[1] Percentage of those in only somewhat or not related job giving reason.